Draft Environmental Assessment

RAPID CITY (RC) WEST RADIO TOWER

CITY OF RAPID CITY, PENNINGTON COUNTY, SOUTH DAKOTA

FEMA PROJECT: HSGP 2010-SS-T0-0019 (12837)

June 2012

Prepared by:

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For:

U.S. Department of
Homeland Security
FEMA Region VIII
Denver, Colorado

FEMA

ENVIRONMENTAL ASSESMENT

EMERGENCY SERVICES RAPID CITY WEST RADIO TOWER

CITY OF RAPID CITY, SOUTH DAKOTA

NW/4, SW/4, SECTION 4, T1N, R7E, PENNINGTON COUNTY

for

PENNINGTON COUNTY 9-1-1 USERS BOARD

300 Kansas City St., Ste.201

Rapid City, SD 57701

and

DEPARTMENT OF HOMELAND SECURITY /

FEDERAL EMERGENCY MANAGEMENT AGENCY

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SECTION 1.0: INTRODUCTION

1.01 BACKGROUND

On behalf of Pennington Area Emergency Services Communication Center Users Board (Pennington County 9-1-1 Users Board), Land Recyclers Inc (LRI) has completed this Draft Environmental Assessment (EA) of the expected environmental impacts associated with the construction of a transmitting and receiving facility at the proposed Rapid City West Radio Communications Tower Site (Tower Site). This Draft EA has been written in support of a State Homeland Security Grant application submitted by Pennington County 9-1-1 Users Board for FEMA Homeland Security grant funds. The South Dakota (SD) Office of Homeland Security administers the federal Department of Homeland Security grants for the State Homeland Security Grant Program (SHSP). Homeland Security projects supported through the SD Office of Homeland Security focus on building protection capabilities across the state, expanding regional collaboration, strengthening interoperable communications, and improving capabilities to detect and respond to hazardous materials and other disasters.

Through the SD Office of Homeland Security (grantee), SHSP funds are made available to local governments and agencies (subgrantee) through an application and award process. Projects involving ground disturbance, physical security enhancements, new construction, renovation, and modifications to buildings and structures will trigger a review for environmental and historic preservation considerations. Typical activities such as construction of a new telecommunication facility will be required to meet the provisions of FEMA's Environmental Planning and Historic Preservation (EHP) Program. Common environmental and historic preservation laws and executive orders include the Endangered Species Act; Floodplains, Wetlands, and Environmental Justice Executive Orders; The National Historic Preservation Act; Farmland Protection Policy Act; Clean Air Act; Comprehensive Environmental Response, Compensation; and Recovery Act; and Resource Conservation and Recovery Act. Usual concerns may include presence of threatened and endangered species, wetlands, archeological artifacts, and hazardous materials as well as impacts on prime and unique soils and floodplains. As noted above, for projects involving communication towers, Subgrantees (such as Pennington County 9-1-1 Users Board), are required to complete and submit the EHP Screening Form and all the required supporting documentation before starting projects that require EHP approval.

Documentation in support of the EHP Screening Form has been prepared by LRI and is included in the accompanying Environmental Assessment (EA). The EHP Screening Form is enclosed as Appendix A of this Draft EA.

The Pennington County 9-1-1 Users Board grant application was submitted on behalf of all local emergency responders in the Rapid City area. The grant, if awarded, will be used to improve interoperability and network coverage within the Rapid City Area, as well as linking to the State of South Dakota’s public safety radio communication system.

This area is underserved with respect to radio communications largely as a result of the north – southerly trending ”hog-back”, a landform that is somewhat unique to the Rapid City area. The “hogback is a series of outcrops of resistant sandstone, which at locations within the western part of the City, rise up to heights in excess of 700 ft above surrounding lands. This series of outcrops occur in a roughly north – south trending alignment and isolate the airspace (with respect to transmitting and receiving radio waves) of the Rapid City West Area from the central and eastern parts (see Figure 19). The crest of the “hogback” structure is traced by that part of US Highway 16 (Mount Rushmore Rd) south of US I-90.

The communication system currently in use by local Rapid City area public ***safety*** agencies (Pennington County 9-1-1, police, fire, and other first responders) and local public ***service*** agencies (public works, transportation, hospitals, etc.) is an interoperable statewide VHF trunked voice radio system owned and operated by the State of South Dakota. Coverage in the Rapid City metro area is provided by one radio tower in the south central part of Rapid City (known as the “Skyline Tower”). Portable radio coverage from this single site is non-existent in several areas and very poor in many others. The proposed radio tower and associated equipment will be added to the statewide system to improve portable radio coverage in these areas. A part of the grant money will be allocated to purchase simulcast radio repeaters, transmission cable, antennas, combiners and other necessary equipment to create a simulcast system in the Rapid City area (Rufledt, 2012).

This proposed action represents significant progress, and is a critical step in the process to improve overall public safety voice radio system coverage in the Rapid City area. Only through commitment and careful planning will public safety and service agencies finally realize the benefits of an interoperable communication network that enables these agencies to talk within and across agencies and jurisdictions via radio and associated communications systems.

The proposed upgrades and enhancements to existing Pennington County 9-1-1 emergency communications services in support of fire, and police and other first responders would result in increased public safety and possibly reduced loss of human life, as well as reduced property losses.

Pennington County, located in south - western South Dakota, has an area of approximately 2,789 square miles and a population in 2010 of 100,948 people (2010 census). The terrain of the County varies considerably depending on location. The western portion of Pennington County consists of the Black Hills. The eastern portion of the County consists of rolling prairie, the Badlands, and major wooded river draws. It is also the location of the Mount Rushmore National Memorial. Its county seat is Rapid City.

Rapid City, situated in north central Pennington County, is named after Rapid Creek on which the city is established, it is set against the eastern slope of the Black Hills mountain range. The population was 67,956 as of the 2010 Census. As noted above, the city is divided by a unique geologic feature, known locally as a “hogback” that splits the western and eastern parts of the city into two. The location and height of the hogback exerts a controlling influence on the

design and layout of any transmitting and receiving radio communications network in the Rapid City area. The city is transected north and south by US Highway 190 and east to west by US Highway 90 (Interstate I-90).

The Tower Site a 0.65 acre parcel owned by the State of SD National Guard (Tax Parcel # 3704354010). Pennington County 9-1-1 Users Board has entered into a Joint Powers Agreement (AGREEMENT) with the South Dakota National Guard (SDNG). The AGREEMENT remains in full force a term of 50 (fifty) years with the option of the County to extend the AGREEMENT for up to two additional 25 year terms. The actual center of the tower is located at N44º 04' 20.81" Latitude and W103º 17' 20.00", Longitude (NAD83) at an elevation of 3487 ft AMSL (NAVD 88) (EA Project Files, 2012a) as is depicted in Figures 1 through 4. The legal location of the Tower Site is Part of the NW/4, of the SW/4, Section 4, Township 1 North, Range 7 E, Rapid City, SD.

The Tower Site is located within the "V" formed where Hillsview Drive branches off from Raider Road. An electrical substation, operated by Black Hills Power, is located approximately 80 feet northwest of the tower site. Stevens High School and other urban development begins 500 feet to the north of the site with large parking areas along Hillsview Drive and Raider Road. National Guard training grounds are to the south, west, and east. The lands beyond the National Guard property to the south and east, as well as the lands to the northwest, north, and northeast are fully developed with residential housing. The parcels bounding the Tower Property are shown in Appendix A, Exhibit A-1.

The Project Site is located east of Hillsview Drive and is accessed via a 40 foot wide Access Easement approximately 121.2 feet in length, which extends from Hillsview Drive to the Tower Property[1]. At that boundary, the Access Easement ties into a graded gravel drive that extends across the Tower Property from the Access Easement to the compound area. The locations of Hillsview Drive, the shared Access Easement, the substation, and Tower Property are displayed in Appendix A, Exhibit A-1 and Exhibit A-2 of this document.

It is estimated that a total land area of approximately 0.20 acres will be permanently disturbed (long term) and 0.07 acres temporary (short term) by the construction of this facility (see Survey of Site, Appendix A, Figures 4A and 4B, and Table 2-1, page 9). Recent photos of the Tower Site and surrounding area is depicted in Figures 5 – 14.

[1] Note: the Access Easement will be shared with Black Hills Power – as this ground is also part of the access to their substation – see Access Easement Exhibit A-1 and Easement Exhibit A-2, Appendix A.

1.02 PURPOSE AND NEED

The purpose of the grant is to enhance and improve local preparedness and security capabilities. Pennington County has established that in order to do so, there is a need to provide public safety telecommunication infrastructure that is capable of establishing and maintaining interoperable radio coverage during emergency events.

The western part of Rapid City, composed of several rapidly expanding communities with diverse agency locations, has experienced undesirable public safety radio communications problems during routine and emergency operations. Most of these problems were due to a lack of coverage from the State of South Dakota public safety radio system. In general, Pennington County 9-1-1 Users Board as well as other Rapid City safety and service agencies seek to address these significant coverage issues by adding two radio towers (simulcast transmit and receive sites) on the east and west sides of Rapid City (see Appendix A, Figure 19).

Pennington County 9-1-1 Users Board asked Motorola Solutions to perform an analysis of existing radio communications systems coverage and how two additional towers (i.e., establishment of a simulcast system in Rapid City) would enhance Rapid City area coverage. The results of their modeling are presented in a Coverage Analysis Report dated August 8, 2011 (Motorola, 2011). The Motorola study applied computer models to evaluate predicted coverage for three significant scenarios: a mobile radio, a portable radio[2] operating on the street, and a portable radio operating in a wood frame structure with 8 dB loss. This coverage study compares predicted coverage from just the existing Skyline radio site to coverage from a three site simulcast system that includes the Skyline site, the Proposed Rapid City West site, and the Rapid City East site (note: The Rapid City East Site is not addressed in this Draft EA).

The study concluded that it is difficult to achieve reliable portable coverage in the Rapid City area because of the rugged terrain, high environmental noise levels, and the frequency band used. The addition of two more sites significantly increases portable coverage in the east and west, especially in small to medium size buildings. These results and further detail on the modeling study are available in the Motorola Solutions report maintained in the Project File.

A critical element in Pennington County 9-1-1 Users Board plan to enhance their communications system – the need to expand their tower infrastructure – was substantiated and refined by the modeling study. The report identified the need for a new Tower Site of sufficient height to serve as the primary location in the West Rapid City Area for new radio communications equipment. The results of the modeling study provided an optimum tower height as a function of location and ground elevation (as well as a search ring for alternate acceptable locations). In conjunction with the existing State of South Dakota Public

[2] By FCC definition, a "mobile" radio is permanently affixed as part of a motor vehicle. "Portable" on the other hand meets much broader criteria, simply stated it's any easily moved gear usually part of a transportable transmitting station. A "portable" usually means a hand held unit – you "carry on your hip".

Broadcasting (SDPB) owned Skyline Tower, the installation of the proposed West Radio Tower to service the Rapid City West Area, would serve as a critical component to complete communications coverage west of the "hogback" and reduce several existing communication gaps in the current system's coverage in this sector of Rapid City. This new Tower Site will support a variety of public safety and governmental radio systems, for both local and state public safety and service agencies. This Tower Site will also be capable of supporting other frequency bands as well as mobile data systems in the future.

In summary, the Proposed Tower Site Facility will be utilized to provide the following:

- Increased coverage for emergency responders using the system;
- Additional equipment to improve and expand voice and data coverage;
- Improve overall interoperable communications among first responder organizations;
- Enhanced security and facility control; and
- Continue to support cost-effective measures such as systems sharing.

SECTION 2.0: ALTERNATIVES ANALYSIS

2.01 PROJECT INFORMATION

Project Information: The Proposed Action is the construction of a new 190 ft Self Supporting Radio Communications Tower to support the following public safety radio system improvement goals:

- Improved local public safety and service responsiveness to the citizens, businesses and agencies of the Rapid City Metro Area (western sector) through reliable voice communications for all Pennington County 9-1-1, police, fire, and other first responders and local public service agencies within the area.
- The proposed Rapid City West Radio Tower Facility would serve as a critical component of Pennington County 9-1-1 Users Board proposal to enhance communications coverage and reduce several existing communication gaps in the current system's coverage of the western sector of the City. The selected site for the radio tower facility would provide optimum coverage for the targeted service area.
- Promote radio communications interoperability for city, county and state public safety and governmental agencies within the metro area.
- Improved radio communications reliability through the addition of a radio communications facility with good security, redundancy and emergency power capabilities; and
- Supporting near-term and long-term communications needs.
- The proposed upgrades and enhancements to existing Pennington County 9-1-1 emergency communications services in support of fire, and police and other first responders would result in increased public safety and possibly reduced loss of human life, as well as reduced property losses.
- Under the No Action Alternative, there would be no new construction. Current interoperability communications gaps and coverage gaps would continue, compromising the ability of emergency service providers to respond effectively and rapidly to emergency situations. There would continue to be adverse impacts to human health and safety in the western sector of Rapid City as a result of the No Action Alternative.

2.02 PREFERRED ACTION ALTERNATIVE

The Proposed Action: Rapid City West Radio Tower Site Facility: The property selected for the Tower Site is owned by SDNG and is the preferred location for a new tower, as it met the following criteria:

- Physical location met the requirements of planned radio network – centrally located in the western sector of the city with an acceptable ground elevation;

- Low cost: no need to spend local tax dollars on the purchase or rental of property. Within the Joint Powers Agreement, it is specified that In lieu of land rental fees, SDNG will be permitted to collocate their antenna;
- Minimal impact to land and compatible with existing on-site land usage, and adjoining and surrounding land usage. Although historical aerial photography shows that the 0.65 acre Tower Site and Parent Property have been undeveloped and vacant since at least 1938, the Tower Property is in an area of mixed land use – including light industrial, institutional, public, and residential. An electrical substation, operated by Black Hills Power, is located approximately 80 feet northwest of the tower site. Stevens High School and other urban development begins 500 feet to the north of the site with large parking areas along Hillsview Drive and Raider Road. National Guard training grounds are to the south, west, and east. The lands beyond the National Guard property to the south and east, as well as the lands to the northwest, north, and northeast are fully developed with residential housing.
- Based upon readily ascertainable information, there is no evidence that the proposed action will have any of the unusual risks or impacts to sensitive areas as described and discussed in major Resource Categories 1 through 16, presented in Section 3 of this Draft EA.
- This property offers easy access to local roads and utilities, minimizing costs and maintenance issues. From an environmental aspect, there are no lakes, rivers, streams, wetlands, prime farmland or other unique or sensitive habitat on or near the property.

The location selected for the construction of the New Radio Tower is a 0.65 acre parcel of land owned by the State of SD National Guard (SDNG). Pennington County 9-1-1 Users Board has entered into a **Joint Powers Agreement with the SDNG.** Under terms of the Agreement, Pennington County 9-1-1 Users Board will be entitled to maintain their facility on the 0.65 acre parcel for an initial term of 50 years with two 25 year renewal options. The actual center of the tower is located at N44º 04' 20.81" Latitude and W103º 17' 20.00", Longitude (NAD83) at an elevation of 3487 ft AMSL (NAVD 88) (EA Project Files, 2012a) as is depicted in Figures 1 through 3. The legal location of the Tower Site is Part of the NW/4, of the SW/4, Section 4, Township 1 North, Range 7 E, Pennington County, SD.

As the Tower Property falls within the City of Rapid City, it is subject to Chapter 17.46 Public District zoning regulations in the Rapid City, South Dakota, Code of Ordinances. The public district is established to provide for facilities which serve the general public that are operated by the United State of America, the State of South Dakota or any political subdivision which qualifies for exemption from property taxes, or nonprofit organizations. Facilities within the public district are generally not involved in commerce and frequently are sited with public safety and government efficiency in mind. Utilities are provided for in the public district to aid in the development of efficient systems.

Communication facilities are allowed as conditional uses under Chapter 17.46.030 City Of Rapid City, South Dakota Code Of Ordinances. However, as the Rapid City Attorney (Jason E. Green) indicates, the City "has no authority to regulate what the State does on its property" and, therefore, requires no permits or approvals for construction of the radio tower (Appendix B, Section B4, letter to Ms. Janelle Fisk, Fisk Land Surveying & Consulting Engineers, Inc., August 12, 2011)

The Proposed new Tower Site is located at the western margin of the city in an area of mixed use. The Tower Site is located within the "V" formed where Hillsview Drive branches off from Raider Road. An electrical substation, operated by Black Hills Power, is located approximately 80 feet northwest of the tower site. Stevens High School and other urban development begins 500 feet to the north of the site with large parking areas along Hillsview Drive and Raider Road. National Guard training grounds are to the south, west, and east. The lands beyond the National Guard property to the south and east, as well as the lands to the northwest, north, and northeast are fully developed with residential housing.

The proposed SST Site consists of a 180 ft central support structure topped with 10 ft of ancillary equipment (lightning rod, etc) radio communications tower for a total height of 190 ft (for elevation view, please refer to, Architecture Drawings, Design 1, 2011). The proposed action is classified as a "New" Transmission and Receiving Site. The Site consists of one 24 ft x 10 ft x 9 ft (L x W x H) prefabricated equipment shelter, a 15 kW emergency generator enclosed within a weather protective and sound dampening enclosure; a 250 gallon propane (LP) AST, all located within a 45 ft (E-W) x 50 ft (N-S) fenced compound area. The fence (chain link) will be 6 ft tall, toped by 1 ft of 3-strand barbed wire. The equipment shelter will be bolted to a 6 inch concrete slab that is secured to four reinforced concrete footings that extend down to a depth of 4 ft below grade. The concrete slab supporting the shelter will be 26 ft x 12 ft x 0.5 ft. The 15 kW generator will be secured to a 4 ft x 8 ft x 1 ft concrete pad. As noted above in page 4, two foundation designs to support the SST remain under consideration. In one design, the tower will be founded upon three deep drilled piers; each pier will extend to a depth of 33 ft below grade. The other design makes use of three relatively shallow piers and ties each pier to a larger buried pad of dimension (22.5ft x 22.5ft x 1.5ft).

The Project Site is located east of Hillsview Drive and is accessed via a 40 foot wide Access Easement approximately 121.2 feet in length, which extends from Hillsview Drive to the Tower Property[3]. At that boundary, the Access Easement ties into a graded gravel drive that extends across the Tower Property from the Access Easement to the compound area. The locations of Hillsview Drive, the shared Access Easement, the substation, and Tower Property are displayed in Appendix A, Exhibits A-1 and A-2 to this document.

It is estimated that a total land area of approximately 0.20 acres will be permanently disturbed (long term) and 0.07 acres temporary (short term) by the construction of this facility (see

[3] Note: the Access Easement will be shared with Black Hills Power – as this ground is also part of the access to their substation – see Access Easement Exhibit A1 and Easement Exhibit A2, Exhibits A Section.

Survey of Site, Appendix A, Figures 4A and 4B, and Table 2-1, below). Recent photos of the Tower Site and surrounding area is depicted in Figures 5 – 14.

Table 2 -1 Temporary and permanent disturbance by disturbance type

Proposed Tower Site Area	Temporary (Acres)	Permanent (Acres)
Staging Area: (60 ft x 50 ft)	0.07	0.00
Tower Site: 0.13 acre area (75' x 75 ') including a fenced Compound Area (45' x 50') which will enclose a 190' SST, a prefabricated transmitter building (12' x 24') mounted on a cement slab, and a emergency generator and a 250 gallon propane tank each mounted on a separate cement slab. Parking areas and a gravel apron are planned outside of the fenced compound.	0.00	0.13
Proposed 10 x 54 ft utility easement for power and fiber optic cable, brought to the compound area buried from Raider Road to the Tower Site.	0.00	0.01
Gravel drive (10 ft x 263 ft) for access to compound from gravel road, leading to the substation from Hillsview Drive	0.00	0.06
Sub Totals:	**0.07**	**0.20**
Total Temporary + Permanent Disturbance (Acres):	**0.27**	

The Proposed Action did not have any of the unusual risks or impacts to sensitive areas as described and discussed in major Resource Categories 1 through 16, presented in Section 3 of this Draft EA.

No unique viewsheds related to national or state designated scenic byways or National Historic Landmarks were identified for the project. The climate in Rapid City is characterized by long arid summers and long dry winters, with short but distinct spring and autumn seasons. The ground surface of the 0.65 acre tower parcel is of moderate slope, declining at a rate of about 11% to the east. As a result stormwater does not pool or pond on the tower site – overland flow drains to the east (Figures 1, 3, 4A). As a result, there is no surface water features such as wetlands (NWI Map, Figure 15), lakes, ponds, streams, or creeks on the Tower Site or on the adjoining properties.

2.03 ALTERNATIVES CONSIDERED BUT NOT IMPLEMENTED

Other Structures: An alternative to the construction of a new tower site would be to collocate on an existing structure in the search area. The criteria for an alternative structure would be structure type (such as another communications tower, rooftop, silo, water tower, etc), potential security issues, load bearing capacity of candidate structure, physical location, structure height, ground elevation, and costs (either capital outlay or recurring). A search was conducted of existing tall structures within a 1 mile radius of the Proposed Tower Site to indentify existing tower sites as well as tall structures for possible collocation. No towers or other tall structures were identified within the 1 mile search radius.

Other Land: In addition to existing structures, Pennington County 9-1-1 Users Board considered the lease or purchase of a different parcel of land for tower construction. However, this seemed illogical since the SDNG owned property that was appropriate for tower development and was willing to waive rental fees in exchange for the privilege to collocate their equipment on the proposed tower.

In some cases, a potential candidate may have exceeded search criteria, but was still evaluated to verify that the best overall candidate location would be selected for the new tower facility. Table 2-2 (Rufledt, 2011), below, is a listing of alternate sites that were considered, their location, and a brief summary comment regarding the suitability of the candidate. Figure 20 displays the location of each candidate site considered. Note that only Candidate Sites 1 – 5 were considered for the West Site. The other candidate locations in the table include Sites 6 – 9, were considered as a future third simulcast site to further improve building penetration in downtown Rapid City. The remaining potential Sites 10 – 13 were considered for a second simulcast site to service the East Rapid City metro area. At this time, Site 12 appears to be the preferred tower site for the east metro.

In Table 2-2, Candidate 2, a potential Tower Site atop Turkey Hill, was long considered the best West Site. However, as seen in the Topographic Map (USGS, 1978), for this candidate revealed the presence of four standing structures within about 300’ of the candidate site. When viewed on a high resolution aerial photograph, at least 10 structures are seen within 300 ft of the candidate site. Thus it appeared that this Tower Site would be within an active farmstead / homestead with standing structures, possibly historic. If historic, evaluations by an Architectural Historian would then be required to determine if there was a direct and/or visual adverse effect upon the historic property. In addition, this preliminary candidate site was eliminated due to high estimated cost to get fiber cable to the site.

Table 2-2: Other Sites Considered / Why Rejected

Figure 20 Map Ref. #	Latitude / Longitude		Reason for Rejection
West Site (1)	44.07245°	- 103.28887°	Proposed Rapid City West Radio Tower Site
	N44° 04' 20.81"	W103° 17' 20.00"	
2	44.07670276432672, -103.32096576690674		Preliminary candidate site atop Turkey Hill. Best west site based on elevation. However, USGS Topo map shows many structures within 300' of site. This location appears to be an active farmstead with standing structures, possibly historic. If historic, evaluations by an Architectural Historian would be required to determine if there was an adverse direct or visual effect on a historic property. In addition, this preliminary candidate site was eliminated due to high cost to get fiber to site.
	N44° 04' 36.11"	W103° 19' 15.58"	
3	44.06967292932921, -103.28914403915405		SDNG property. They preferred we not locate a tower there.
	N44° 04' 10.77"	W103° 17' 20.92"	
4	44.072062550257556, -103.2918906211853		SDNG property. They preferred we not locate a tower there.
	N44° 04' 19.39	W103° 17' 30.81"	
5	44.07474497751337, -103.28118324279785		SDNG property. They preferred we not locate a tower there
	N44° 04' 29.08"	W103° 16' 52.26"	
6	44.119634452910226, -103.23775291442871		New high water reservoir site. Likely shadowing caused by ridge line to south would prevent attainment of coverage goals. Possible future site for E/W coverage if needed.
	N44° 07' 10.99"	W103° 14' 16.13"	
7	44.114889768657854, -103.23929786682129		Existing tower farm. No space on any of the existing towers or rent too high or shadowing problems
	N44° 06' 53.46"	W103° 14' 21.80"	
8	44.073280448966436, -103.21208953857422		Being considered as a possible future 3rd simulcast site to further improve building penetration in downtown Rapid City.
	N44° 04' 24.28"	W103° 12' 42.92"	

Table 2-2: Other Sites Considered / Why Rejected (Continued)

Figure 20 Map Ref. #	Latitude / Longitude		Reason for Rejection
9	44.090359222891415, -103.24393272399902		Current KNBN TV tower and site of several local public safety channels. Considered too noisy for additional VHF equipment.
	N44° 05' 25.43"	W103° 14' 38.10"	
10	44.091684625509636, -103.17788600921631		Near commercial zoning. Thought to be too expensive to lease or buy.
	N44° 05' 29.95"	W103° 10' 40.28"	
11	44.09146886431679, -103.15608501434326		Thought to be too expensive to lease or buy.
	N44° 05' 29.26"	W103° 09' 21.96"	
(East Site) 12	N44.08871, -W103.14968°		Rapid City East Selected Radio Tower Site
	N44° 05' 19.42"	W103° 08' 58.84"	
13	44.08872554623935, -103.13235282897949		Existing water tower site. Not enough room inside fence for our equipment. Thought to be a bit too far east to accomplish downtown Rapid City goals. Thought to be too close to Rapid City Regional Airport. Closer to their typical approach and departure path than site Rapid City East.
	N44° 05' 19.33"	W103° 07' 56.47"	

Note: Figure 20 Map Reference #: Numbers 1-13 in column 1 refer to locations of candidate sites in Figure 20.

2.04 NO ACTION ALTERNATIVE

Under the No Action alternative, there would be no construction of a new 190 ft Transmitting and Receiving Radio Tower nor would there be the associated equipment required to extend and provide radio communications services to the Rapid City West Area. This area will continue to be underserved with respect to radio communications. Portable radio coverage in the western sector of Rapid City will remain non-existent in several areas and very poor in many others. The proposed purchase of simulcast radio repeaters, transmission cable, antennas, combiners and other necessary equipment to create a simulcast system in the western part of Rapid City will not occur.

Failure to implement the proposed action will postpone or eliminate this critical step in the process to improve overall public safety voice radio system coverage in the Rapid City area. Public safety and service agencies will continue to operate with few of the benefits of an interoperable communication network that enables these agencies to talk efficiently and securely within and across agencies and jurisdictions via radio and associated communications systems.

SECTION 3.0: EXISTING ENVIRONMENT AND POTENTIAL IMPACTS

3.01 RESOURCE 1: NOISE

Noise is defined as unwanted sound that interferes with normal human activities or wildlife behavior, or may otherwise diminish environmental quality (EPA, 1974). Noise can come from a number of sources and at varying frequencies and may be continuous or intermittent, persistent or occasional. Noise and sound share the same physical aspects; however, noise is generally considered a disturbance, whereas sound is defined as a particular auditory effect produced by a given source (e.g., a motor running). How sound is interpreted, as either pleasant (e.g., birdsong) or unpleasant (e.g., jackhammer), depends upon the listener's current activity, past experience, and attitude toward the source. The proposed Tower Site is located in an open, vacant field, in an area with relatively rapid changes in ground elevation as well as widely mixed land use. On the properties adjoining the proposed Tower Site, there are no noise-sensitive land uses. The closest residential property is about 0.1 mile to the east while the closest school, Stevens High, is approximately 0.1 mile to the north (see Figure 16). The hilly, irregular topography in the area would tend to shield these potentially sensitive receptors from any noise that may be generated at the tower site during construction or operation activities. Ground elevation at the tower site is approximately 60 feet higher than ground elevation at either of these potential receptors. As shown in the photographs in Figures 5 and 7, the school to the north and residences to the east are not visible. Accordingly, the blocking ground and vegetation would interfere with and attenuate any noise that would be generated at the tower site. The most likely noise or sounds most people would be exposed to in this semi-rural setting is occasional to frequent roadway noise. Roadway noise is the collective sound energy emanating from motorized transportation comprising chiefly engine, tire, and aerodynamic and braking elements.

Impact Threshold – Mitigation measures will have to be identified and implemented if the construction or operation proposed project will have an adverse impact on noise within the project or surrounding area. Noise levels on the property owned by the SD National Guard are exempt from city land use ordinances. In conversation with Brad Schultz (Schultz, 2011), he did say that the state does not regulate noise.

Proposed Action Alternative

Construction-Related Impacts – Because of construction-related activities, there will be a temporary increase in localized noise generated during tower construction. The use of heavy equipment would be a short-term, temporary increase in activity and noise only associated with the initial, localized construction phase of the proposed project. The impact of noise would be greatest within 50 feet of the site. Noise levels decrease with distance, and the impact would, therefore, be attenuated as distance from the site increased. As noted, there are no noise-sensitive populations adjacent to the Tower Site. A generator used for emergency backup power and the continuous, low volume hum of the communications equipment would be other sources of noise associated with the operation of the proposed tower facility. The generator

would run for short periods on a regular basis (0.5 hour per week test) for routine checkup for readiness and maintenance. As a result, it is expected that the generator would run about 24 hours per year. Based on the intermittent use of the generator, no significant noise impacts are anticipated. Noise impacts resulting from the long-term operation and maintenance of the communication tower are not expected to be significant. No adverse impacts to ambient noise levels within the project area are anticipated.

Operations-Related Impacts - After construction had concluded, the ambient noise level returned to its normal level. Temporary noise could be generated by climate control such as heating and air conditioning equipment or on rare occasions, the backup emergency generator at the Tower Site. The backup emergency generator provides electric power to communications equipment as needed - use only occurs during equipment maintenance and testing and as a backup during interruption of the primary (grid) power supply. Noise from backup generators is primarily composed of engine noise and exhaust noise. The emergency generator operation, which operates for 0.5 hour once a week, other than during power outages, is fully muffled. Therefore, there are no noise impacts that will result from Operations-Related activities and none are anticipated.

Electric generators at transmitting and receiving sites are typically powered by either diesel or spark ignition such as propane or natural gas engines. The Rapid City West Tower Site has a typical 15 kilowatt (kW), 20 horsepower (HP) backup generator fueled by a 250 gallon propane, steel walled tank. The generator is within a muffled sheet metal enclosure and is secured to a concrete slab. Exhaust from the generator passes through a muffler within the enclosure. The combination of the concrete enclosure and muffling results in minimal noise related to the backup generator within a few feet from the source.

No Action Alternative – Under the No Action Alternative, there would be no new construction and therefore no resulting adverse impacts on the ambient noise environment.

3.02 RESOURCE 2: AIR QUALITY

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS; 40 CFR Part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards; primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation and buildings. The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. The six criteria air pollutants include carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), sulfur dioxide (SO2), particulate matter ($PM_{2.5}$ and PM_{10}), and lead (Pb). $PM_{2.5}$ and PM_{10} are acronyms for particulate matter consisting of particles smaller than 10 and 2.5 micrometers, respectively. The table below is a summary of some of the significant properties that differentiate $PM_{2.5}$ and PM_{10}.

Table 3-1: Particulate Matter – Properties of Coarse Particles (PM_{10}) and Fine Particles ($PM_{2.5}$)

	Coarse Particles (PM_{10})	**Fine Particles ($PM_{2.5}$)**
What they are	• smoke, dirt and **dust** from factories, farming, and roads • mold, spores, and pollen	• toxic organic compounds • heavy metals
How they're made	• crushing and grinding rocks and soil • then blown by wind	• Driving automobiles • burning plants (brush fires and forest fires or yard waste) • smelting (purifying) and processing metals
Potential Particulate Travel Distance	Few hundred feet or as much as 30 miles	many hundreds of miles.
Length of Time airborne	minutes or hours	Days or weeks.
Health Effects	air and the particles travel into your respiratory system (lungs and airway). Along the way the particles can stick to the sides of the airway or travel deeper into the lungs.	
		Smaller particles can travel deeper into the lungs. The farther particles go, the worse the effect.
Toxicity		Heavy metals and cancer causing organic compounds - result in **$PM_{2.5}$** can have worse health effects

Note: Data available at (http://www.airinfonow.org/html/ed_particulate.html, Pima County, Air Quality Program, AZ Department of Environmental Quality accessed Mar 03, 2012.

As noted, the EPA has National Ambient Air Quality Standards for the six "criteria" air pollutants. An area that does not meet these standards is designated as a "non-attainment" area[4] by the EPA. In a telephone conversation with Brad Schultz, ES Manager I, SD Air Quality Program, SD DENR, he advised B. Harrison of LRI that South Dakota does not have non-attainment areas for any of the six criteria pollutants (Schultz, 2011).

The Rapid City area is located in the high plains and is subject to periods of droughts and high winds. These are the main ingredients for fugitive dust problems. Fugitive dust is identified as dust from mining activity, gravel roads, construction activity, street sanding operations and wind erosion. Fugitive dust is the main air quality problem in the Rapid City area and is typically reported as the principal component in **PM_{10}** measurements. A Natural Events Action Plan (NEAP) for high winds was developed for Rapid City to control fugitive dust emissions. If a project will be disturbing more that one acre of soil, a fugitive dust control action plan approved by the Air Quality Permit Section, Air Quality Program, SD DENR would be required.

The goals of the Rapid City Area Air Quality Board are to maintain compliance status with the EPA's National Ambient Air Quality Standards, and to prevent adverse health and environmental effects that result from fugitive dust emissions and smoke from wood burning

[4] Nonattainment area," an area that does not meet or that contributes to ambient air quality in a nearby area that does not meet the national primary or secondary ambient air quality standard for the pollutant

and open burning. These goals are achieved and maintained through the development and implementation of programs of education, air pollution prevention, abatement and control.

Impacts to air quality can come from a variety of sources located at transmitting and receiving sites. During construction, sources of new emissions include construction vehicles and equipment and fugitive dust emissions resulting from ground-disturbing activities. These impacts, being temporary and limited in duration, are dependent on the type of construction activity, the location of the activity and the proximity to the source of emissions.

The use of heavy equipment during construction activities may result in short-term minor adverse impacts on air quality on and near the Tower Site. Typically, construction-related air quality impacts last only for the duration of construction activities and would occur during normal working hours (i.e., 7:00 a.m. to 5:00 p.m.), and would not result in increases in criteria air pollutants above accepted levels.

The minor emissions from construction can be further reduced or mitigated through the use of best management practices (BMPs). BMPs for dust control include: limiting the number and speed of vehicles; covering trucks hauling dirt; use of water or straw to control fugitive emissions from areas with disturbed surficial soil and in areas with unacceptable levels of potentially mobile dust; and minimization of area disturbed. BMPs for Track Out Area Controls include installation of a wash station and require all haul truck vehicles leaving the facility to remove track out materials through the use of water. BMPs for construction vehicle and equipment emissions include: limiting vehicle idling time; conducting proper vehicle maintenance; and wherever possible, the use of locally available products and materials to reduce transportation-related emissions.

It is expected that the subject tower project will disturb approximately 0.27 acres (total of permanently and temporarily disturbed ground, Table 2-1, page 8). Such a small disturbance footprint is unlikely to result in any excedence of air quality standards, or regulated release of Hazardous Air Pollutants (HAP)[5]

Operations-related impacts to air quality from the subject transmitting and receiving site could occur as a result of the operation of the backup generator, which will burn propane. After project related construction activities are concluded, the ambient air quality at the Tower Site would return to its previous normal levels. Implementation of the Proposed Action will not result in the long-term operation of significant emission-generating sources, nor will it significantly increase or alter the existing levels of ambient air quality parameters. As planned, a 15 kW emergency propane powered generator, to be located within a dampened metal enclosure within the secured compound, would be an intermittent source of emissions from operation of the Tower Site. The generator, carefully selected to be EPA compliant, would only operate during power outages and for required testing or maintenance - about 0.5 hour per

[5] HAP or Hazardous Air Pollutants are any of the 187 pollutants listed in Section 112 of the 1990 Clean Air Act Amendments. HAPs are known or suspected of being toxic or carcinogenic.

week. As a result, it is expected that the generator would run about 24 hours per year. Federal regulations limit the use of backup generators to 500 hours per year. Backup generators would not be expected to cause the ambient air quality levels to increase because of their limited operation as emergency power sources.

A letter dated January 6, 2012 from Brad Schultz (Schultz, 2012), Environmental Scientist Manager, SD Air Quality Program, was received by Barry Harrison, Land Recyclers Inc, stating that following the air quality review for the proposed Emergency Management Services radio tower projects planned for two locations, Elk Vale Road and Stevens High School areas, also including new backup electrical generators, has been completed by their program. Based on the best available information (provided by phone and by e-mail), the proposed projects will not cause a significant impact on the air quality in Rapid City area and the projects are approved. A copy of this correspondence is included in Appendix B, Section B3.

Impact Threshold – Mitigation measures will have to be identified and implemented if the construction or operation proposed project will have an adverse impact on air quality within the project or surrounding area. The SD DENR has determined that this project will not result in a significant impact on air quality.

Proposed Action Alternative – Under the Proposed Action, there could be short-term minor impacts to air quality during the construction phase due to heavy equipment use. Measures would be taken to limit emission of fugitive dust, including watering down of construction areas. Only de minimus emissions of pollutants is anticipated as a result of the periodic operation of the on-site emergency generator. No significant impacts to air quality are anticipated.

No Action Alternative – Under the No Action Alternative, there would be no construction of the tower at the Hardin County Site, nor would there be any new construction. There would have been no increase in air quality impacts from the No Action Alternative.

3.03 RESOURCE 3: GEOLOGY AND SOILS

The proposed tower location is a grass-covered slope with scattered immature ponderosa pine trees along a small, north trending finger ridge on the lower flanks of Turkey Hill on the east side of the Black Hills and the west side of Rapid City. Most of the ridge top was removed during construction of an adjacent electrical substation. Except for a narrow strip of level ground remaining along the western boundary of the tower property, the land slopes southeast to east in a broad, shallow gap between descending ridges, with an average grade of about 11%, terminating in the elevated grades of Raider Road, on the east, and Hillsview Drive, on the west.

The ridge top is the remnant of a Pleistocene terrace deposit, comprised of silty soil and water-worn pebbles and boulders; underlying this formation and all the hills and slopes in the area is the Spearfish Formation, a Mesozoic age deposit consisting mainly of red shale beds and layers of gypsum. In the Tower Site, a deep geotechnical soil boring that terminated at a depth of 31 feet, indicated that a two-foot bed of gypsum lies below surficial soils, at a depth of approximately 3 feet, succeeded by several feet of moist silty red clay and then, at a depth of 12 feet, hard, dry red siltstone down to 31 feet. The geotechnical soil boring formed the basis of a subsurface exploration program and geotechnical engineering review for the proposed cellular tower. The work was conducted by American Technical Services, Inc. (ATS). A summary of their findings is presented in their Report Of Geotechnical Engineering Analysis issued September 8, 2011 (ATS, 2011) and is available for review in the Project file.

The surface soils developed in alluvial deposits transported from the hills above. These soils consist of silts and fragments of gypsum and siltstone derived from the parent Spearfish Formation. At the tower property, these soils are classified by the NRCS as Rekop-Gypnevee-Rock outcrop complex, 15 to 40 percent slopes. Rekop soils formed in rock fragments from weathered outcrops and slope erosion derived from gypsum bedrock, and Gypnevee soils formed in material weathered from gypsum or gypsiferous siltstone.

In the geotechnical engineering analysis by ATS, they indicated that the Spearfish Formation sediments have some unstable characteristics associated with the presence of gypsum beds and the potential threat of formation degradation in wet conditions (ATS, 2011).

Impact Threshold- Under the Proposed Action alternative, a tower constructed without reference to the unstable nature of the underlying Spearfish Formation sediments may become unstable in certain conditions.

Proposed Action Alternative - Under the Proposed Action, as recommended by American Technical Services, the tower will be supported by drilled concrete piers, thus mitigating the instability problem.

No Action Alternative - Under the No Action Alternative, no physical changes to the project site would occur and there would be no impacts to soils.

3.03.1 FARMLAND PROTECTION – PRIME & UNIQUE FARMLAND

The Farmland Protection Policy Act (FPPA) (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.), which states that federal agencies must “minimize the extent to which federal programs contribute to the unnecessary conversion of farmland to non-agricultural uses,” was considered in this Draft EA. Prime farmland is characterized as land with the best physical and chemical characteristics for the production of food, feed, fiber, forage, and oilseed crops (USDA, 1989). Prime farmland is either used for food or fiber crops or is available for those crops; it is not urban, built-up land, or water areas.

The proposed project site does not contain soils that the NRCS classifies as prime and/or unique farmland. State Soil Scientist Deanna M. Peterson concurred with this finding in her letter to Barry Harrison dated February 9, 2012. A copy of this letter is included in this Draft EA in Appendix B, Section B4.

Impact Threshold – The proposed project will have no impact on prime or unique farmlands, as no such farmlands exist at the site.

Proposed Action Alternative Under the Proposed Action, no construction would occur within or adjacent to prime or unique farmlands and, therefore, there would be no adverse impacts to prime or unique farmland soils.

No Action Alternative - Under the No Action Alternative, no construction would occur and there would be no adverse impacts to prime or unique farmland soils.

3.04 RESOURCE 4: WATER RESOURCES

Water resources are streams, lakes, rivers, and other aquatic habitats in an area and include surface water, groundwater, wetlands, floodplains, coastal resources, and wild and scenic rivers. Water resources-such as lakes, rivers, streams, creeks, canals, and drainage ditches-make up the surface hydrology of a given watershed. The term "waters of the United States" applies only to surface waters (including rivers, lakes, estuaries, coastal waters, and wetlands) used for commerce, recreation, industry, sources of fishing, and other purposes.

The Safe Drinking Water Act (SDWA) provides for the protection of public health by regulating the U.S. public drinking water supply (P.L. 93–23, 42 U.S.C. §300f). The SDWA aims to protect drinking water and its sources (e.g., rivers, lakes, reservoirs, springs, and groundwater wells) and authorizes EPA to establish national health–based standards for drinking water to protect against naturally occurring and man-made contaminants. Every public water system in the United States is protected by the SDWA. Under Section 1424(e) the SDWA prohibits Federal agencies from funding actions that would contaminate a sole-source aquifer or its recharge area. Any federally funded project (including those that are partially federally funded) with the potential to contaminate a designated sole-source aquifer is subject to review by EPA. EPA's regulations implementing the SDWA requirements are found in 40 CFR 141–149. Federal SDWA groundwater protection programs are generally implemented at the State level.

The Clean Water Act (CWA), as amended, is the primary Federal law in the United States regulating water pollution (P.L. 92–500, 33 U.S.C. §1251). The CWA regulates water quality of all discharges into "waters of the United States." Both wetlands and "dry washes" (channels that carry intermittent or seasonal flow) are considered "waters of the United States." Administered by EPA, the CWA protects and restores water quality using both water quality standards and technology-based effluent limitations. The EPA publishes surface water quality standards and toxic pollutant criteria at 40 Code of Federal Regulations (CFR) Part 131.

The CWA also established the National Pollution Discharge Elimination System (NPDES) permitting program (Section 402) to regulate and enforce discharges into waters of the United States. The NPDES permit program focuses on point-source outfalls associated with industrial wastewater and municipal sewage discharges. Congress has delegated to many States the responsibility to protect and manage water quality within their legal boundaries by establishing water quality standards and identifying waters not meeting these standards. States also manage the NPDES system.

The Coastal Zone Management Act of 1972 (CZMA) (16 U.S.C. §1451) provides States with the authority to determine whether activities of governmental agencies are consistent with federally approved State Coastal Zone Management Plans (CZMP). The intent of the CZMA is to prevent any additional loss of living marine resources, wildlife, and nutrient-enriched areas; alterations in ecological systems; and decreases in undeveloped areas available for public use.

Federal statutes, executive orders (EO), State statutes, and State agency regulations and directives protect water quality and the beneficial uses of water resources. EO 11988 (Floodplain Management) and EO 11990 (Protection of Wetlands) mandate the control of activities that indirectly influence water quality.

EO 11988 (Floodplain Management) requires Federal agencies to determine whether a Proposed Action would occur within a floodplain and to take action to minimize occupancy and modification of floodplains. A floodplain is defined as the lowlands and flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands. At a minimum, areas designated as floodplains are susceptible to 100 year (1% annual chance) flooding.

PRE-CONSTRUCTION CONDITIONS: Water resources are inherently site-specific resources. As seen in the USGS Topographic Map (USGS, 1978) for the proposed action, Figures 1 and 3, the actual center of the tower support structure is located in an uplands area, 3487 feet above mean sea level (NAVD 1988; EA Project Files, 2012a) with no indications of surface water features (wetlands, floodplains, coastal management zones, and wild or scenic rivers) noted during site reconnaissance, in the reviewed databases or maps.

The Tower compound, occupying a 0.13 acre (75 x 75 foot) part of a 0.65 acre Tower Site, slopes to the east across the compound and generally across the Tower Site. As shown on Figure 4A, at the west side of the compound, ground surface elevation is approximately 3490 ft above msl, decreasing to 3482 ft above msl at the east side – an 11% grade. This easterly direction of ground surface slope would also control the drainage of storm water flowing away from the compound area, with the largest component of flow to the east. A grading plan (EA Project Files, 2012b) has been drafted to reduce the slope across the compound area to 6% as well as to provide access to the compound. The contours that illustrate the proposed graded surface are also shown on Figure 4A (refer to the heavier black contours).

WETLANDS: Inspection of Figures 1, 3, and 15, indicate there are no wetlands on the Tower Site, on the adjoining land or in the vicinity of the Tower. The location of the nearest surface

water resource, a wetland designated PUSAh[6] is shown in Figure 15, National Wetlands Inventory Map (NWI) for the Tower Site and vicinity (USFWS, 2011). The wetland is approximately 0.5 mile to the southwest on the National Guard Training Grounds.

FLOODPLAINS: Figure 17 displays the FEMA Map (FIRM 460064 0733B) that includes the Tower Site and reveals that the subject location lies within Unshaded Zone C (an area of minimal flooding) and is not within a 100 Year (a 1% chance of annual flooding) or a 500-year (a .2% chance of annual flooding) Flood Zone.

The closest classified streams, lakes or ponds to the Tower Site is Rapid Creek and Canyon Lake, approximately 0.7 and 0.8 miles, respectively, south of the tower site.

Since this project will not involve a regulated discharge of fill material into a Waters of the U.S., the activity is not subject to Department of the Army regulatory authorities and no permit pursuant to Section 404 of the Clean Water Act is required from the U.S. Army Corp for the proposed tower project.

3.04.1 SURFACE WATER, GROUNDWATER, AND DRINKING WATER QUALITY

WATER QUALITY: On January 4, 2012, via US Mail, the South Dakota Department of Environment and Natural Resources (SD DENR) advised Barry Harrison, Senior Environmental Engineer, LRI, that several Programs within the Department had reviewed LRI's submittal requesting regulatory review and concurrence with the proposed Pennington County 9-1-1 Users Board Rapid City West Radio Tower Project. The letter (copy is included in Appendix B, Section B3) informed Mr. Harrison that "the following programs find that this construction, using conventional construction techniques, should not cause violations of any statutes or regulations administered by the Department and have these comments:

1. Based on the information provided, the department does not anticipate any adverse impacts to drinking waters of the state. The **Drinking Water Program** has no objections to this project.

2. Based on the information provided, the department does not anticipate any adverse impacts to surface waters of the state. The **Surface Water Quality Program** has no objections to this project.

3. At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site. Any construction activity that **disturbs an area of one or more acres** of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Contact the Department of Environment and Natural Resources for additional information or guidance at 1-800-SDSTORM (737-8676) or

[6] PUSAh: Palustrine, unconsolidated shoreline, temporarily flooded, diked or impounded wetland

www.state.sd.us/denr/des/surfacewaterlstormwater.htrn .

4. The **Waste Management Program** does not anticipate any adverse impacts. Any construction debris needs to be disposed of at a permitted solid waste facility. No debris or other material will be staged or disposed of in any wetlands or floodplains. Please contact the Waste Management Program if you have any questions on solid waste disposal at (605) 773-3153.

5. Based on the information provided, the **Ground Water Quality Program** does not anticipate adverse impacts to ground water quality by this project. However, there have been numerous petroleum and other chemical releases throughout the state. Of the releases reported to the department, none were located in the vicinity of the project areas. If contamination is encountered or created during construction activities, Emergency Management Services, or its designated representative, must report the contamination to the department at (605) 773-3296. Any contaminated soil encountered or created must be temporarily stockpiled and sampled to determine disposal requirements. Construction materials to be used in the contaminated area should be evaluated for chemical compatibility and adjusted accordingly."

The letter concludes with signature by John Miller, Surface Water Quality Program, with copy to Mark Mayer, Drinking Water Program; Vonni Kallemeyn, Waste Management Program; and Janile Lewis, Ground Water Quality Program.

According to information readily available on the SD DENR website (http://denr.sd.gov/des/sw/StormWaterandConstruction.aspx, accessed March 5, 2012), construction related activities with an area of disturbance less than 1 acre do not require a National Pollutant Discharge Elimination System (NPDES) Permit. The permit has simple and uniform terms to prevent any storm water from becoming polluted prior to leaving a construction site. In this spirit, and in light of Department's comments in response #3 (see above) there will be an Erosion & Sediment Control Plan (Plan) that includes:

- Sediment Control Measures;
- Erosion & Sediment Control (ESC) Construction Sequence;
- Construction & ESC Sequence Schedule Permanent Stabilization Measures;
- Storm water Management Considerations;
- Maintenance;
- Spill Prevention;
- Spill Control Practices;
- Soil Surface Stabilization Practices; and
- Maximum limits of land exposures for selection of erosion controls.

Additional detail for each of these components of the Plan is posted on Sheet 5 of 5: Erosion and Sediment Control Plan / Narrative (EA Project Files, 2012c).

Impact Threshold – Mitigation measures will have to be identified and implemented if the construction or operation proposed project will have an adverse impact on Water Resources within the project or surrounding area.

Proposed Action Alternative – Potential surface water, groundwater, and drinking water quality impacts from construction may result from erosion and runoff as a consequence of soil disturbance from material storage, site access, site preparation, or road and driveway construction. Vehicle and equipment washing will only be permitted on-site in a prepared concrete wash-out area (see Erosion and Sediment Control Plan / Narrative, Sheet 5 of 5, EA Project Files, 2012c). Pesticides or herbicides applied to stimulate re-vegetation of areas cleared during construction also have the potential to contaminate receiving waters. Experienced crews familiar with local vegetation should be retained and remain under contract to implement a soil stabilization and re-vegetation program that includes soil preparation, application of herbicides, and selection and dispersal of a custom seed mix. All these activities will be temporary and of limited scope.

Water quality impacts from construction activities will be minimized by only using construction equipment in good repair, well maintained, and monitored for leaks. The substantial distance between the tower construction site and any potential receiving waters is a pollution prevention measure. In light of the fact that the footprint of ground disturbed during construction of the Rapid City West Tower will be approximately 0.27 acre (combined short and long term disturbance - see Table 2-1, page 8), the area of soils open to erosion will be relatively minor.

Any mobilized soil and runoff from the Tower Site will be managed and reduced by the implementation of BMPs (see Erosion and Sediment Control Plan / Narrative, Sheet 5 of 5, EA Project Files, 2012c). BMPs for erosion control to be implemented include: silt fencing to remove particulates from flowing surface waters; siting of staging areas to minimize erosion; replanting as soon as practicable; and limiting the number and speed of vehicles on-site.

We do not anticipate any significant impact to water quality – including surface water, groundwater or drinking waters from the construction or operational activities at the Tower Site.

No Action Alternative – Under the No Action alternative, there would be no tower construction at the proposed site therefore no impacts to Surface Water, Groundwater, and Drinking Water Quality would occur.

3.05 RESOURCE 5: BIOLOGICAL RESOURCES

The Tower Site is located within the corporate limits of the City of Rapid City on undeveloped land owned by the South Dakota National Guard. The terrain is a hillside of moderate slope with an 11% grade on the site with the elevation rising from 3,483 feet on the eastern boundary to 3,493 feet on the western boundary. The slope continues to a summit of 3,511 ft at a

distance of approximately 100 ft west of the site. The Raider Road, located 50 ft to the east, is at an elevation of 3,470 feet.

The site is located within the "V" formed where Hillsview Drive branches off from Raider Road. An electrical substation, operated by Black Hills Power, is located approximately 80 feet northwest of the tower site. Stevens High School and other urban development begins 500 feet to the north of the site with large parking areas along Hillsview Drive and Raider Road. National Guard training grounds are to the south, west, and east. The lands beyond the National Guard property to the south and east, as well as the lands to the northwest, north, and northeast are fully developed with residential housing.

3.05.1 GENERAL VEGETATION, WILDLIFE, WILDLIFE HABITAT, FISH

The proposed tower location is a narrow ridge-top and steep slope on the east flanks of the Black Hills. The ridge-top consists of an old Pleistocene terrace remnant, characterized by a deposit of silty soil with fairly heavy concentration of pebbles and small to medium boulders. The vegetation is characteristic of a habitat typical of extremely dry conditions and populated by terrestrial organisms that are adapted to low moisture habitat. Vegetation on site was limited to immature ponderosa pine trees (Pinus ponderosa) in the terrace remnant and thin mixed grasses and a few forbs on the downslopes. Due to the nearby paved roads and power substation, the species expected on the site are a mix of native, reclaimed, and invasive species such as wheatgrasses (Agropyron spp.), prairie junegrass (Koeleria cristata), and cheatgrass (Bromus tectorum). Expected forbs include yellow sweetcover (Melilotus officinalis), scarlet globemallow (Sphaeralcea coccinea), and desert madwort (Alyssum desertorum).

General wildlife expected on and in the vicinity of the tower site are those species that not only inhabit mixed grassland and sparse woodland habitat but also species that are tolerant of human activity due to the proximity of the site to urban development.

Species expected on the site and in the vicinity include the desert cottontail (Sylvilagus auduboni), coyote (Canis latrans), red fox (Vulpes vulpes), and white-tailed jackrabbit (Lepus townsendii) as well as numerous rodent species such as the deer mouse (Peromyscus maniculatus), northern grasshopper mouse (Onychomys leucogaster), meadow vole (Microtus pennsylvanicus), thirteen- lined ground squirrel (Spermophilus tridecemlineatus), and northern pocket gopher (Thomomys talpoides).

Impact Threshold – Mitigation measures will need to be implemented if habitat disturbance and permanent habitat loss might result in impacts to a specified wildlife population. While individuals might be displaced, as long as there is suitable and similar habitat readily available, impacts are not expected and mitigation would not be required.

Proposed Action Alternative – The proposed tower construction could displace individual animals but, due to the presence of similar habitat in the vicinity, the project is not expected to adversely affect these species' populations.

No Action Alternative – Under the No Action alternative, no impacts to vegetation, wildlife, wildlife habitats or fish species would occur.

3.05.2 MIGRATORY BIRDS

Vegetation on the site is a mix of grasses and forbs with sparse ponderosa pine (*Pinus ponderosa*) trees in the vicinity. Raptor nesting substrate is lacking on the tower site but is present in the pine trees in the vicinity. Due to the proximity of urban development and human activity, the potential for raptors to nest in the vicinity is low but species that could nest and forage in the area include golden eagles (*Aquila chrysaetos*), red-tailed hawks (*Buteo jamaicensis*), Swainson's hawks (*Buteo swainsoni*), American kestrels (*Falco sparverius*), great horned owls (*Bubo virginianus*), merlins (*Falco columbariu*) and northern harriers (*Circus cyaneus*). Of these, the Swainson's hawk is most tolerant of human activity and would be the species most likely nesting in the vicinity. Rough-legged hawks (*Buteo lagopus*) likely winter in the area. Additional species that could fly over the area for foraging include the ferruginous hawk (*Buteo regalis*) and prairie falcon (*Falco mexicanus*), although their typical nesting substrate of rock outcrops and rocky cliffs are lacking in the area.

Passerine bird species expected include those that inhabit grassland and woodland habitats such as the western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), song sparrow (*Melospiza melodia*), common nighthawk (*Chordeiles minor*), common crow, American robin (*Turdus migratorius*), horned lark (*Eremophila alpestris*), and English sparrow (*Passer domesticus*).

The site is on the edge of urban development. With all the activity and development in the area, it is unlikely the proposed tower is within an avian flight pathway aside from random use by species found in an urban area and in the grassland habitat.

Impact Threshold – Communication towers have the potential to significantly impact common as well as rare bird species. Under certain circumstances, large numbers of songbirds can be killed in bird strikes. Strikes by waterfowl and other game birds are much less common, but can also occur. The likelihood that a tower will cause significant mortality is dependent on many factors including tower height, height above surrounding structures, the presence of guy wires, and the type of lighting. The location of the tower is also a factor. Towers along a flight path, such as near a river or between wetlands, are more likely to cause bird strikes.

Proposed Action Alternative

Construction of the proposed communications tower has been determined to be the best option because co-locating the communications equipment on an existing tower or other structure is not an available option. Under the Proposed Action, tower design and location would mitigate collision-related bird mortality.

To mitigate potential impact to migratory birds, in selecting the proposed location and site development plan for the tower, Pennington County 9-1-1 Users Board reviewed and gave close consideration to the **Service Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation and Decommissioning** issued by the US Fish and Wildlife Service. At a height of 190 ft above ground level, according to FAA guidelines, the tower will not have to be lit nor has the tower design incorporated guy wires. The tower will be self supporting. This project will not be sited in or near wetlands or any area that would create an attraction to birds. The site is not in an area with a high incidence of fog, mist, and low ceilings. With these mitigation measures, no significant impacts to avian species are expected. Compliance with the Guidelines referenced above is a condition of FEMA grant approval and must be verified at project closeout.

No Action Alternative

Under the No Action alternative, no impacts to migratory birds would occur.

3.05.3 WETLAND HABITAT

The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or filled material into waters of the U.S., including wetlands, pursuant to Section 404 of the Clean Water Act (CWA). Additionally, Executive Order 11990 (Protection of Wetlands) requires federal agencies to avoid, to the extent possible, adverse impact of wetlands.

According to the National Wetland Inventory Map of the site there are no wetlands on the site nor were any observed on the Tower Site, on the adjoining properties or in the vicinity of the Tower Site by Barry Harrison, Senior Environmental Engineer with LRI. The nearest wetlands are approximately 0.5 mile to the southwest on the National Guard training grounds. Rapid Creek and Canyon Lake are approximately 0.7 and 0.8 miles, respectively, south of the tower site.

Since this project will not involve a regulated discharge of fill material into a Waters of the U.S., the activity is not subject to Department of the Army regulatory authorities and no permit pursuant to Section 404 of the Clean Water Act is required from the U.S. Army Corp for the proposed tower project.

Impact Threshold

Mitigation measures will have to be identified and implemented if the proposed project will have an adverse impact on wetlands located within the project area. Due to the lack of wetland on the site and in the vicinity, this project will not impact wetlands.

Proposed Action Alternative

Under the Proposed Action, no impacts to wetlands are anticipated, because the proposed project site is not located in or near a wetland.

No Action Alternative

Under the No Action alternative, no impacts to wetlands would occur.

3.06 THREATENED AND ENDANGERED SPECIES, CRITICAL HABITAT

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, the project area was evaluated for the potential occurrences of federally listed threatened and endangered species. The ESA requires any federal agency that funds, authorizes, or carries out an action to ensure that their action is not likely to jeopardize the continued existence of any endangered or threatened species (including plant species) or result in the destruction or adverse modification of designated critical habitats.

3.06.1 FEDERALLY LISTED THREATENED AND ENDANGERED (T&E) SPECIES

The federally listed threatened and endangered (T&E) species of concern in Pennington County, South Dakota are the whooping crane (*Grus americana*), least tern (*Sterna antillerum*), black-footed ferret (*Mustela nigripes*) and Sprague's pipit (*Anthus spragueii*) (USFWS, 2012). Additional federally listed species occur in South Dakota but are not expected in this county and, therefore, will not be discussed further. Suitable habitat and the potential for each of the four species to occur on the site or in the vicinity are described below.

Whooping crane

Whooping cranes occur in South Dakota as an occasional seasonal transient. Bulrush is the dominant emergent in the wetlands used for nesting. "Whoopers" migrate through South Dakota each spring and fall, frequently with sandhill cranes. Typically they overnight along bodies of water, particularly larger rivers, and move into cultivated stubble fields to feed during the day.

Whooping cranes tend to gather overnight at large bodies of water, which are lacking on and in the vicinity of the proposed communication tower. Although it is possible for a migrating whooping crane to use this area, the likelihood of this happening is remote. The selection of this area by an individual whooping crane would be due to chance rather than being attracted to any habitats in the area. The proposed tower will be self-supporting and will lack any guylines that can create obstacles to birds. Due to the lack of guylines on the tower, the lack of typical suitable habitat on the site and in the vicinity, and the high level of human activity in the area, the proposed project would have "no effect" on the whooping crane.

Least Tern

Least terns nest on open shorelines, riverine sandbars, and mudflats throughout the Mississippi and Missouri river drainages. Suitable nesting habitat is sparsely vegetated with sand or gravel substrate and located near an adequate food supply (USFWS, 2010).

The site lacks shorelines and riverine habitat. Rapid Creek and Canyon Lake are both more than 0.7 miles from the site. Due to the urban development between these wetland and aquatic areas, it is unlikely the least tern would occur on the site and the proposed project would have "no effect" on this species.

Black-footed ferret

The black-footed ferret's original distribution in North America closely corresponded to that of prairie dogs (*Cynomys* spp.) (Fagerstone, 1987). Black-footed ferrets were reintroduced in South Dakota at five sites with the nearest being in Conata Basin of Badlands National Park, approximately 55 miles to the east. Due to the distance to the reintroduction site, the lack of prairie dogs on the site, and the adjacent urban area, it is unlikely this species would occur on the project site or in the area. This project will have "no effect" on the black-footed ferret.

Sprague's Pipit

These birds are strongly tied to native prairie throughout their life cycle and they may avoid roads, trails, and habitat edges (USFWS, 2011). Due to the lack of native prairie and the close proximity of the site to urban development, it is unlikely this species would occur on the site. The proposed project will have "no effect" on this species.

3.06.2 SD THREATENED, ENDANGERED AND CANDIDATE SPECIES

In addition to federally listed species, the State of South Dakota also lists species of concern that they consider threatened or endangered even though they aren't federally listed. Table 3-2 (see below), lists the State listed species. Not included are fish species since the project area is on an upland site and is 0.7 mile from any permanent body of water. Those species potentially on the site or in the vicinity are discussed below.

Eastern Hognose Snake

This snake species is found in openly wooded upland hills, forest edges, fields, woodland meadows, prairies, forest-grassland ecotones, sand plains, barrier islands, fire-managed pinelands, river valleys, riparian zones, and various other habitats with loose soils and amphibian prey (NatureServe, 2011). This snake crawls on the surface and burrows into soil. It overwinters in burrows (made by mammals or self-dug) or under rocks of talus slopes. Suitable habitat is on the site and there is the potential for the snake to inhabit the site. However, due to the proximity of the site to urban development it is unlikely that any denning would occur on the site or in the vicinity. The snake, if present, is likely just foraging in the area and denning in undeveloped areas to the west on the National Guard training grounds. In addition, due to the minimal disturbance associated with the project, the potential for impacting this species is unlikely; therefore, the proposed project will have "no affect" on this species.

Table 3-2. South Dakota Threatened and Endangered Species and their potential on the Rapid City West Communication Tower site or vicinity. [1]

Common Name	Scientific Name	State Status[2]	Potential on the Site
Reptiles and amphibians:			
Eastern hognose snake	*Heterodon platirhinos*	ST	Possible
False map turtle	*Graptemys pseudogeographica*	ST	Unlikely
Lined snake	*Tropidoclonion lineatum*	SE	Possible
Birds:			
American dipper	*Cinclus mexicanus*	ST	Unlikely
Bald eagle	*Haliaeetus leucocephalus*	ST	Flyovers
Eskimo curlew	*Numenius borealis*	SE	Unlikely
Osprey	*Pandion haliaetus*	ST	Unlikely
Peregrine falcon	*Falco peregrines*	SE	Unlikely
Piping plover	*Charadrius melodus*	ST	Unlikely
Greater Sage-Grouse	*Centrocercus urophasianus*		Unlikely
Mammals:			
River otter	*Lontra Canadensis*	ST	Unlikely
Swift fox	*Vulpes velox*	ST	Unlikely

[1] List provided by the South Dakota Game, Fish and Parks Web site last updated on March 16, 2010: http://gfp.sd.gov/wildlife/threatened-endangered/threatened-species.aspx

[2] Key to Codes: SE = State Endangered ST = State Threatened

Lined Snake

This species is found on prairie hillsides and canyon bottoms, woodland edges, vacant city lots, residential yards, and abandoned trash dumps, in moist situations that may or may not be close to a body of water or wetland; in daytime, this snake can be found under rocks, logs, trash, and other cover (NatureServe, 2011). Suitable habitat is present on the site and in the vicinity; therefore there is the potential for this species on the site. While an individual snake could be disturbed during construction, the proposed action affects only 0.27 acre. Due to the minimal disturbance, the project would have "no affect" on the lined snake population.

3.06.3 SPECIES OF CONCERN

Additional species of concern are tracked by the South Dakota Natural Heritage Program and reported on the Natural Diversity Database. The results of a search of the database for species of concern reported on the communication tower or within one mile are listed in Table 3-3. Of the observations listed, only the common merganser was reported within the last 10 years.

Table 3-3. Wildlife and plant species of concern in the State of South Dakota reported on the site or within one mile of the proposed tower site on the South Dakota Natural Heritage Database.

Common Name	Scientific Name	Observation Date
Mammals		
Silver-haired Bat	*Lasionycteris noctivagans*	1970
Silver-haired Bat	*Lasionycteris noctivagans*	1974-10-08
Townsend's Big-eared Bat	*Corynorhinus townsendii*	1960-08-29
Birds		
Common Merganser	*Mergus merganser*	2005-06-05
Plants		
Buff Fleabane	*Erigeron ochroleucus*	1994-05-18
Buff Fleabane	*Erigeron ochroleucus*	1991-05-14

The two bat species listed could occur on the tower site but, due to the lack of habitat for roosting, their use of the site would be for foraging or migrating over the area. For the common merganser, the site lacks any bodies of water so the species is not expected on the site.

The buff fleabane observations occurred in 1991 and 1994. It was likely this plant species was observed in the area prior to any development, when the site was native habitat. Due to the proximity of the cell tower site to the two roads and power substation, the vegetation is a mix of reclaimed grasses, invasive grasses and forbs, and native species. It is unlikely this rare native species is present on the site.

Impact Threshold

Mitigation measures will need to be implemented if impacts are anticipated to any federal or state listed threatened, endangered, or candidate species or their designated critical habitats.

Proposed Action Alternative

Construction and operation of the proposed communication tower will have "no effect" on the the whooping crane (*Grus americana*), least tern (*Sterna antillerum*), blackfooted ferret (*Mustela nigripes*) and Sprague's pipit (*Anthus spragueii*) which are the only federally listed threatened or endangered species in Pennington County. Habitat is lacking for these four species.

Of the 12 State listed reptiles, amphibians, birds and mammals, there is the potential for the eastern hognose snake and the lined snake to inhabit the vicinity of the project site but it is unlikely either would occur on the tower site or be disturbed by the proposed construction.

Due to the small size of the affected area and due to the minimal disturbance associated with the project, the potential for impacting these species is unlikely; therefore, the proposed project will have "no effect" on these two snake species. In addition, based upon available information, the construction and operation of the proposed communication tower will have no significant impacts to fish or wildlife resources.

In a letter (via email: Charlene_bessken@fws.gov) dated January 23, 2012 from Charlene Bessken, USFWS biologist, it was stated: "The U.S. Fish and Wildlife Service concurs with your conclusion that the described project will not adversely affect listed species."

In a letter (via email: Eileen.dowdstukel@state.sd.us) dated January 23, 2012 from Eileen Dowd Stuckel, SD Department of Game, Fish and Parks, it was stated: "I concur with your conclusion that the project will have no effect on whooping crane, least tern, black-footed ferret and Sprague's pipit and will have no significant impact to fish or wildlife resources."

The letters via email are included for review in Appendix B, Section B2. In accordance with Section 7 of the Endangered Species Act, FEMA has reviewed the referenced documentation and determined that there will be 'no effect on federally-listed threatened or endangered species or their designated critical habitat.

No Action Alternative

Under the No Action alternative, no impacts will occur to federal or state listed threatened, endangered, or candidate species or their critical habitats.

3.07 RESOURCE 7: CULTURAL RESOURCES

A cultural resource is "an aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice." (NPS-28: Cultural Resource Management Guidelines). Tangible cultural resources include intact structures (ranging from roads and other transportation features to buildings), ruins, and scatters of cultural material on the ground surface or buried by the accumulation of soils over time. Intact structures may be generally described as architectural resources, while ruins and the debris from cultural activity are archaeological resources.

In a federal context, cultural resources become historic properties if they meet a specific set of criteria. In the National Historic Preservation Act of 1966, as amended (NHPA) (P.L. 89–665, 16 U.S.C. §470), a historic property is:

> any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places [NRHP] maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of

traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

The NHPA directs the Federal Government to consider the effects of its actions on those cultural resources defined as historic properties under Section 106 "Protection of Historic Properties" (36 CFR Part 800). As defined in 36 CFR Part 800.16(d), the Area of Potential Effect (APE), “is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist.” This APE may be further divided into those lands directly impacted by an undertaking, the APE (direct), and those indirectly impacted, the APE (indirect), which is usually a visual impact.

The APE in this instance is the site of a proposed communications tower on a narrow ridge-top and steep slope on the lower east flanks of Turkey Hill on the eastern side of the Black Hills, at the intersection of two light duty paved roads (Hillsview Drive to the west and Raider Road to the east). The land in the Tower Site consists of open short grasses, scattered forbs and prickly pear, and, on the top of the ridge and scattered on the slopes, immature ponderosa pine.

This location is surrounded by urban development. Outside the National Guard training grounds adjacent to the Tower property, the lands to the south, east and west contain residential subdivisions, while the north is occupied by schools and other municipal facilities. Next to the site at the upper (northerly) edge is a Black Hills Power electrical substation, which has been carved out of the slope on the opposite side of the ridge. Slightly further north sits a very large institutional development (buildings, roads, parking lots) – Stevens High School. None of these architectural structures qualify for consideration for the NRHP.

A synthesis of the Cultural Resources that were identified within the APEs for the Rapid City West Tower facility is developed and presented in two reports that have been prepared by Dr. Brian L. Molyneaux, Consulting Archaeologist:

- A Class III Cultural Resources Inventory at the Rapid City West Radio Tower Site, NWSW Section 4, T1N R7E, Pennington County, South Dakota, by Dr. Brian L. Molyneaux, Consulting Archaeologist, submitted January 9, 2012; and

- New Tower Submission Packet – FCC Form 620, EMS Rapid City West Radio Tower, Emergency Management Services, A Class III Cultural Resources Inventory at the Rapid City West Radio Tower Site, NWSW Section 4, T1N R7E Pennington County, South Dakota, TCNS # 80416, by Dr. Brian L. Molyneaux, Consulting Archaeologist, submitted January 9, 2012.

These reports are maintained in the Project File. Excerpts of Dr. Molyneaux’s work form the basis of Subsections 3.07.1, 3.07.2, and 3.07.3 below. In accordance with Section 106 of the National Historic Preservation Act, FEMA has reviewed the referenced documentation and in consultation with the SD State Historic Preservation Officer (SHPO) has determined that there

will be **'no historic properties affected'** as a result of the proposed action with the following stipulations:

Stipulation 1. No historic properties were identified by other consulting parties.
Stipulation 2. All borrow or gravel material associated with the project must be obtained from a commercial source. If not, additional consultation with the SHPO will be necessary.
Stipulation 3. Activities occurring in areas not identified in your request will require the submission of additional documentation.

SHPO concurred with this determination on February 13, 2012. A copy of this letter is included in Appendix B, Section B1 of this Draft EA

3.07.1 ARCHAEOLOGICAL RESOURCES

Background research in the archaeological site records of the South Dakota Historical Society (SDHS) indicate that there were no pre-AD1800 cultural sites within the APE (direct), but there were two sites nearby: 39PN862, an artifact scatter on an eroded ridge at a lower elevation, 500 feet southeast below Raider Road; and 39PN861, an artifact scatter on an eroded ridge at a lower elevation 800 feet south below Hillsview Drive. These sites have been determined as "not eligible" for listing on the NRHP. They have lost their integrity due to natural erosion and the spread of Rapid City development and population up the eastern slope of the Black Hills (e.g., at its recordation, 39PN0862 was cut by dirt bike tracks).

Impact Threshold - Mitigation measures would have to be identified and implemented if the proposed project would have an adverse impact on archaeological resources within the project APE (direct) and APE (visual) that were listed or eligible for the NRHP, as mandated under NHPA Section 106.

Proposed Action Alternative - Under the Proposed Action, no impacts to archaeological resources are anticipated. The SD SHPO has determined that there are no historic properties to be affected by this project. If historic or archaeological materials are discovered during construction, all ground disturbing activities shall cease and FEMA/SDHS will be notified.

No Action Alternative - Under the No Action Alternative, no impacts to archaeological resources would occur.

3.07.2 ARCHITECTURAL RESOURCES

The original plat of the Tower site (1879: General Land Office) shows no buildings or other structures within the quarter, except a small stretch of a wagon road that crossed the southeast corner (now Canyon Lake Drive), approximately 2200 feet from the proposed tower center. Samuel P. Wells obtained the land patent for N1/2 SW Section 4, T1N R7E on the 6th of February, 1891. Mr. Wells obtained this land under the Timber Culture Act of 1873, which granted additional land (160 acres) to homesteaders willing to plant at least 40 acres in trees

(42nd Congress, Sess. III, Ch. CCLXXVII, ***An Act to encourage the growth of timber on western Prairies***). Given the terms of this patent, the Tower property was originally a grass-covered slope. The nearest cultivated land was in the southeast corner of the quarter, on the opposite side of the wagon road.

Within a one-mile radius viewshed of the proposed Tower there is one architectural structure listed on the NRHP (Frank and Geneva Bachman House, 4121 Canyon Lake Road, Rapid City (PN00000443), approximately one half mile south). Six other structures are recorded as eligible for the NRHP (the Sioux Sanitarium Hospital and associated buildings (PN0300001, 2, 4, 8, 16, and 19), approximately one mile to the east. The locations of these historic structures is shown in the report NEW TOWER SUBMISSION PACKET – FCC FORM 620, Figure 9 – Historic Properties Viewshed Map, page 34 of 42, (Molyneaux, 2012b).

Frank and Geneva Bachman House: The house at 4121 Canyon Lake Drive (known as the Rod Cassidy House when listed on the NRHP in 1998) is an example of a Lustron prefabricated house. During the building boom after World War II, Carl Strandlund obtained a government loan to produce homes of steel with porcelain coated exterior panels, steel framing and steel interior walls and ceiling. For two years (1949 and 1950) his Lustron Corporation produced almost 2500 of these homes. The Bachman House is a Newport model, introduced late in 1949. The Newport was a smaller (and cheaper) design, intended to counter the rapidly increasing costs of manufacture of these steel structures. As noted in the preceding paragraph, the location of the Bachman House is shown in Figure 9 – Historic Properties Viewshed Map (*Ibid.*). Photographs of the front of the Frank and Geneva Bachman House, and view from the Bachman House north towards the proposed tower and the view from tower south towards Bachman House are included as Figures 16- 18 (pages 38 – 39) of that report (*Ibid.*).

At its location on Canyon Lake Drive, the house faces west and, therefore, the primary viewing positions are from either the west (looking east at the front of the house) or east (looking out from the front yard of the property). A tower position approximately 205 feet higher in elevation, almost one-half mile distant to the north and set against a busy urban area with numerous disruptions in sight lines (utilities, intervening hills) will therefore have no adverse effect on the setting and ambience of this historic property.

The Rapid City Indian School/Sioux Sanatorium: In 1898, the Bureau of Indian Affairs established an Indian boarding school in the hills overlooking Rapid City. The goal of these boarding schools was to help eliminate Native American culture and, thus, hasten assimilation, by forcibly schooling children in Euroamerican ways. The property expanded into a 1000 acre parcel that the federal government acquired under the Indian Appropriations Act of 1907. The school was briefly transformed into a sanatorium school for the 1929-30 school year, reverted to a conventional school program the next year, and was closed in 1933 when boarding schools consolidated. The facility was then reopened in 1938 (National Archives, Record Group 75, Records of the Bureau of Indian Affairs) as a hospital for Indian people suffering from tuburculosis, and renamed the Sioux Sanatorium (Riney, Scott, 1999, *The Rapid City Indian School 1898 – 1933*, University of Oklahoma Press, Norman). The federal government

eventually transferred unused portions of the surrounding lands outside the facility grounds (673 acres) to the National Guard in 1950. In 1952, the Sanatorium was transferred to the Public Health Service (National Archives, *Record Group 75*, Records of the Bureau of Indian Affairs). In the report referenced in the previous paragraph, Figure 10 is a view of Sioux Sanatorium main building (Sioux San Hospital). Other photographs included show views to the Sanatorium from the proposed tower location as well as several views towards the tower from the Sanatorium.

The site of the boarding school and sanatorium facility is about one mile ENE of the tower location and about 135 feet lower in elevation. At a mile distance, the apparent size of a 190 foot tower would be just under one-half inch. However, about half-way between these places, there is a large hill that blocks the views of the tower from the entire Sanatorium property and views of the Sanatorium property from the tower. While it is possible that the top of the tower might be potentially visible from some point on the Sanatorium property, it would be difficult to see against the intervening urban development and the backdrop of the higher elevations of the hills. Given this topographic situation, it is the Principal Investigator's opinion that the proposed tower construction will have no adverse effect on the setting and ambience of this historic property. SD SHPO has concurred with this opinion as evidenced by there letter dated February 13, 2012 in which they wrote: "We concur with the determination of No Historic Properties Affected (direct effects) and No Adverse Effect (visual effects) for this undertaking". A copy of this letter is included in Appendix B, Section B1 of this Draft EA.

Impact Threshold - Mitigation measures would have to be identified and implemented if the proposed project would have an adverse impact on architectural structures within the project APE (direct) and APE (visual) that were listed or eligible for the NRHP, as mandated under NHPA Section 106.

Proposed Action Alternative - Under the Proposed Action, no impacts to cultural resources are anticipated. The SD SHPO has determined that this project will not result in a significant impact on such historic properties. There are no structures within the APE (direct), and as for the APE (visual), a viewshed analysis shows that there are large intervening hills and urban development that would obstruct the view of the tower from both properties – probably completely. Furthermore, as all these structures are on lower elevations and within the built-up urban environment, and as the appreciation of their setting and ambience as historic properties involves views of the various structures from street level, the presence of a communications tower at a distance of one-half mile (for the Bachman House) and one mile (for the Sioux Sanitarium) would not constitute an adverse effect.

No Action Alternative - Under the No Action Alternative, no impacts to cultural resources would occur.

3.07.3 TRADITIONAL CULTURAL PROPERTIES

A traditional cultural property is a place associated with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community (Guidelines for Evaluating and Documenting Traditional Cultural Properties, National Register Bulletin 38, p.1).

Section 106 of the NHPA requires consultation with Federally-recognized Indian tribes and other cultural groups who may have potential cultural interests in the project area, including traditional cultural properties (TCPs), and acknowledges that Tribes may have interests in geographic locations other than their seat of government. Pursuant to the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission (NPA), all such Tribes and NHOs must be afforded a reasonable opportunity to respond to proposed tower construction notifications, unless the proposed construction falls within an exclusion designated by the Tribe or NHO (NPA, Section IV.F.4).

The Federal Communication Commission's (FCC) **Tower Construction Notification System (TCNS)** facilitates communication with Indian Tribes in the context of the review required by Section 106 of the NHPA.

It also provides Tribes and SHPOs with early notification of proposed towers in order to facilitate compliance with the Commission's rules, and streamline the review process for construction of towers and other Commission undertakings. Tower construction notification allows companies to voluntarily submit notifications of proposed tower constructions to the FCC. The Commission subsequently provides this information to federally-recognized Indian Tribes and SHPOs, and allows them to respond directly to the companies if they have concerns about a proposed construction.

Within the geographical region that the Tower property occupies, the following 16 Tribes have requested notification via the TCNS of any intent to disturb lands over which they have cultural or territorial interest: Spirit Lake Nation - Fort Totten, ND; Lower Brule Sioux Tribe – Lower Brule, SD; Oglala Sioux Tribe - Pine Ridge, SD; Rosebud Sioux Tribe - Rosebud, SD; Sisseton-Wahpeton Oyate of the Lake Traverse Reservation - Sisseton, SD; Ponca Tribe of Nebraska - Niobrara, NE; Omaha Tribe of Nebraska - Macy, NE; Santee Sioux Nation - Niobrara, NE; Cheyenne-Arapaho Tribes of Oklahoma - Concho, OK; Fort Peck Tribes - Poplar, MT; Northern Arapaho - Fort Washakie, WY; Lower Sioux Indian Community of Minnesota - Morton, MN; Upper Sioux Community of Minnesota; Cheyenne River Sioux Tribe - Eagle Butte, SD; Northern Cheyenne Tribe - Lame Deer, MT; and the Turtle Mountain Band of Chippewa - Belcourt, ND.

Each Tribe has completed the consultation process, and none have registered any objections to the proposed project (see Appendix B, Section B1, Tribal Consultation Summary Table).

Impact Threshold - Mitigation measures would have to be identified and implemented if one or more Tribes determined that the proposed project would have an adverse impact on a culturally significant TCP.

Proposed Action Alternative - Under the Proposed Action, as no Tribal TCPs are known to exist within the project area, and based upon the results of the TCNS process, no impacts to Indian religious or archaeological sites are anticipated.

No Action Alternative - Under the No Action Alternative, no impacts to Indian TCPs would occur.

3.08 AESTHETICS AND VISUAL RESOURCES

Aesthetics concerns the extent to which some feature of the environment– including land, water, vegetation, man-made objects and structures is pleasing to the eye and the other senses. Effects to aesthetic and visual resources occur when a proposed development contrasts with the existing environment, architecture, historic or cultural setting, or land use.

Visual resources are inherently difficult to assess because they are subjective. Often, communities, historical societies and their corresponding jurisdictional agencies are the arbiters of visual effects.

Visual resources are significant within Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), as part of the integrity of a property. Integrity, "the ability of a property to convey its significance" (National Park Service 2005), has seven aspects: location, design, setting, materials, workmanship, feeling and association. A property must possess most of these aspects to retain its integrity. It follows that disturbance of the visual integrity of a cultural resource – whether object, structure, place or landscape – represents an adverse effect – one that may disqualify the resource from being considered for the National Register of Historic Places (NRHP).

When a proposed undertaking potentially impacts a listed or eligible historic property, the NHPA references visual resources in 36 CFR PART 800 Sec. 800.5 Assessment of adverse effects: "Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features" (Subpart A (A)(2)v). As defined in 36 CFR Part 800.16(d), the Area of Potential Effect (APE), "is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties." This APE may be further divided into those lands directly impacted by an undertaking, the APE (direct), and those indirectly impacted, the APE (indirect), which is usually a visual impact.

As considered under NHPA guidelines, the location and the disturbed condition of the Rapid City West Tower property strongly suggest that the proposed construction will have no direct adverse effects on aesthetics or visual resources within the APE (direct) as urban development dominates the surrounding landscape.

The Property is a very small portion of a typical Black Hills landscape: a narrow ridge-top and steep slope covered with open short grasses, scattered forbs, yucca and prickly pear, and, on

the top of the ridge and scattered on the slopes, immature ponderosa pine. Two paved light duty service roads form its east, west and south boundaries.

After the lands including the Tower property opened for settlement in 1879, Rapid City quickly developed in the foothills and plains below the Tower Property and, in the early 20th century, began to spread up the slopes. At present, the landscape in all directions consists of small patches of undeveloped land within a wide area of urban development. Outside the paved roads and National Guard training grounds that are adjacent to the Tower Property, the lands to the south, east and west contain residential subdivisions, while the north is occupied by a Black Hills Power electrical substation, which has been carved out of the slope next to the Tower Site on the opposite side of the ridge. Slightly further north sits a very large institutional development (buildings, roads, parking lots) – Stevens High School.

The presence of the two historic properties within a one-mile radius APE (visual) of the proposed Tower requires a careful consideration of visual impacts that the construction might have on their visual integrity.

Impact Threshold – Mitigation measures would have to be identified and implemented if the proposed project would have an adverse impact on the visual integrity of historic properties within the project APE (direct) and APE (visual). The SD SHPO has determined that this project will not have a significant impact on historic properties.

Proposed Action Alternative – Under the Proposed Action, no impacts to cultural resources are anticipated. In regards to the APE (direct), there are no cultural resources within the Tower property. As for the APE (visual), a viewshed analysis shows that there are large intervening hills and urban development that would obstruct the view of the tower from both properties – probably completely. Furthermore, as all these structures are on lower elevations and within the built-up urban environment, and as the appreciation of their setting and ambience as historic properties involves views of the various structures from street level, the presence of a communications tower at a distance of one-half mile (for the Bachman House) and one mile (for the Sioux Sanitarium) would not constitute an adverse effect on their visual integrity.

No Action – Under the No Action Alternative, no activity would be performed and no adverse impact to aesthetics or visual resources would occur.

SECTION 3.09 SOCIOECONOMIC RESOURCES

Social and economic resources include elements unique to the human environment, such as population, culture, employment, business activities, tax base, housing characteristics, and education. These indicators can be used to measure the influence of new investments in the local economy. The investments can be temporary, such as those related to construction, or they can be more permanent, such as those related to the operation and maintenance of facilities. A “ripple effect” is often observed, as indirect economic activities, such as demand for

goods and services, respond to the initial direct economic stimulus. The indicators can be evaluated to determine the potential for a proposed project to cause temporary or long-term social and economic effects. Beneficial social and economic effects are considered significant if they resulted in a measurable increase in annualized rates of employment, personal income, or business activity either on a regional basis or within the local economy of the project area. Adverse effects result from boom/bust economic cycles and temporary increased demand for goods and services beyond existing capacity. In addition, adverse effects to property values could result if the project reduces the desirability of the property. Rapid City, the seat of Pennington County, is a diverse and thriving small Midwestern city. Tourists are drawn to the area to see the presidents busts carved into Mount Rushmore and to visit the Black Hills. The city enjoys a thriving economy based on the farmers who have been raising beans, wheat, and alfalfa since the turn of the last century. A regional center for retail shopping and medical facilities, the city is home to the South Dakota School of Mines and Technology as well as Ellsworth Air Force Base. Over twelve percent of Rapid City's population is made up of Native Americans whose arts and crafts abound in the city's shops.

Rapid City is the second-largest city in South Dakota, and the county seat of Pennington County. Named after Rapid Creek on which the city is established, it is set against the eastern slope of the Black Hills mountain range. The population was 67,956 as of the 2010 Census.

Rapid City is surrounded by contrasting land forms. The city is divided by a rugged north-south tending outcrop that splits the western and eastern parts of the city into two (see Figure 19). The forested Black Hills rise immediately west of the city, while the other three edges of the city look out on the prairie. Protected by the 6,000- to 7,000-foot peaks of the Black Hills, Rapid City enjoys a pleasant climate, free of the icy blizzards and scorching summers typical of much of the rest of the Dakotas. Summers are warm but dry and autumn is noted for its delightful "Indian summer" weather. Mild, sunny days are common throughout the winter. Snowfall is normally light with the greatest monthly average less than eight inches. Annual Average Temperature in Rapid City is 46.6° F; the Monthly Average High Temperature January 34° F, July: 86°F; Average Sunny Days 275; Annual Average Rainfall 16.7 inches; Annual Average Snowfall 39.1 inches; and Average Elevation 3162 feet above Mean Sea Level http://www.rapiddevelopment.com/index.php .

The invention of the automobile brought tourists to the Black Hills. Gutzon Borglum, the famous sculptor, began work on Mount Rushmore in 1927, and his son, Lincoln Borglum continued the carving of the presidents' faces in rock following his father's death. The massive sculpture was completed in 1938. The city benefited greatly from the opening of Ellsworth Air Force Base, an Army Air Corps base. As a result, the population of the area nearly doubled between 1940 and 1948, from almost 14,000 to nearly 27,000 people. Military families and civilian personnel soon took every available living space in town, and mobile parks proliferated. Rapid City businesses profited from the military payroll.

In recent times, Rapid City has been highly rated for its manufacturing climate. A hardworking labor force and a governmental structure deeply rooted in the concept of being a partner in the

success of its business community remain major assets. The city offers an extraordinary quality of life with abundant recreational activities, culture, and short workplace commutes. Recent city development efforts show a continued vision for improvement and growth in the area.

In 2010, Rapid City's total population was 67,956 with an estimated workforce of 64,820 people (ages 16 and older) with an unemployed rate of 5.6%. Based upon 38,300 households in Rapid City, the Average Household Effective Buying Income (EBI)[7] of $49,047 and Per Capita EBI $19,663 with an Average Household Size of 2.43. The Total Work Force in Rapid City numbers 64,820 with 61,175 employed and 3,645 unemployed which yields an Unemployed Rate of 5.6%. Residents of Rapid City with income below the poverty level in 2009 was 15.2% compared to 14.2% for the whole state.

The Largest Employment in Rapid City by Sector is: Government (10,700); Educational & Health Services (9500); Retail Trade (8,700); Leisure & Hospitality (6,900); Professional & Business Services (4,300); and Natural Resources, Mining, and Construction (4,200).

The Major Employers are: Ellsworth Air Force Base (4,503); Rapid City Regional Hospital (3,281); Federal Government (2,905); City of Rapid City (1,906); Rapid City School District (1,684); State of South Dakota (1,125); SD Army National Guard (1,013); and Walmart/Sam's Club (888).

Racial and ethnic characteristics of the population that comprise the City break down as follows: White 80.4%; Black or African American 1.1%; American Indian and Alaskan Native 12.4%; Asian 1.2%; Two or More Races 4.1%; and other 0.8%.

Rapid City is divided into four main areas named by locals according to compass direction. South Robbinsdale and North Rapid City make up the bulk of the community's central core area with the Downtown separating the two neighborhoods. West Rapid is a sprawling, primarily residential neighborhood found "through the gap" created by a scenic and natural barrier of Skyline Drive and Cowboy Hill. Rapid Valley is located in the east, as the city transitions from the foothills to a beautiful prairie landscape. Wide traffic arteries provide easy access between the neighborhoods and interstate and highway access makes getting in, out and around the city easy. Schools, churches, shopping centers and other services are well distributed throughout the city, and the greenbelt that follows Rapid Creek through town makes a seven-mile-long park never more than a few minutes from any home.

For the year 2009, the following HOUSING profile has been compiled:

- Houses: 25,127 (24,012 occupied: 14,206 owner occupied, 9,806 renter occupied);
- Percent of renters in Rapid City: 41%;
- Housing density: 563 houses/condos per square mile;
- Median monthly housing costs: $752;
- Estimated median house or condo value in 2009: $156,900 (it was $85,500 in 2000);

[7] Effective Buying Income (EBI) is disposable personal income, amount of gross income available after taxes, to purchase goods /services.

- Mean detached house price in 2009: $185,407;
- Mobile homes: $40,057;
- Median year house/condo built: 1973; and
- Median year apartment built: 1973.

Median household income in 2009 for:

- White non-Hispanic householders: $47,335;
- Black householders: $24,401;
- American Indian and Alaska Native householders: $21,544; and
- Asian householders: $38,323.

The Rapid City School District, second largest in the state, covers 419 square miles. The district offers services to special education and academically gifted children as well as technology staff development and Indian education programs. Serving Ellsworth Air Force Base and surrounding area, the Douglas School District has 2,400 students, one preschool, three elementary schools, one middle school, and one high school (www.city-data.com/city/Rapid-City-South-Dakota.html http://quickfacts.census.gov/qfd/states/46000.html).

Education attainment for males 25 years and older:

- No schooling: 147
- High school graduate (or equivalency): 4,686
- Bachelor's degree: 3,190

Education attainment for females 25 years and older:

- No schooling: 106;
- High school graduate (or equivalency): 5,561; and
- Bachelor's degree: 3,523.

Impact Threshold – The proposed project may have an adverse impact on property values if the project reduces the desirability of the residential properties to the east and southeast of the tower site. However, given that the tower will be unlit, it will not be visible at night. During the day, a viewer looking to the west towards the proposed Tower from the residential properties, which are located at a distance of about 0.25 mile and more, will see the tower rising into the air. However, because the ground elevations at the residential properties are about 3400 ft above MSL and ground elevation at the Tower Site is about 3490 ft above MSL, the 190 ft tower will not be seen against the sky, but will be seen among all of the surrounding infrastructure such as busy roads, the high school, other buildings of mixed use (commercial, industrial, and institutional), and surrounding residences. Furthermore, the Black Hills reaching elevations in excess of 4000 ft above MSL to the north, northwest, and west (and elevations in excess of 4700 ft AMSL to the west and northwest), assures that the viewer, looking in the direction of the tower will not see the tower framed against the sky, but against the Black Hills rising behind the tower will make it far less intrusive. In light of the above discussion, if any diminished property values does occur, it is not likely that they will be substantial. It will, however be mitigated by the substantial benefits to the community that depends upon cellular service in

the western part of Rapid City. The most tangible beneficial effects of the Proposed Action would be better the vastly improved Pennington County 9-1-1 emergency communications and improved effectiveness of emergency operations in the western part of the City. This would result in increased public safety and possibly reduced loss of human life, as well as reduced property losses.

Proposed Action – Under the Proposed Action, no adverse impacts to social and economic resources are anticipated. Portable radio coverage in the Rapid City west metro area is provided by one radio tower in the south central part of Rapid City. Portable radio coverage from this single site is non-existent in several areas and very poor in many others. The proposed radio tower and associated equipment will be added to the statewide system to improve portable radio coverage in the western sectors of the city. The proposed upgrades and enhancements to existing Pennington County 9-1-1 emergency communications services in support of fire, police and other first responders would result in increased public safety and possibly reduced loss of human life, as well as reduced property losses.

Local equipment would be purchased and local labor would be used to the greatest extent practicable to construct the proposed Radio Tower. This would result in both direct and indirect spending in the local community. The amount of revenue introduced into the local economy during the construction phase would be limited in amount and duration. Ongoing expenses for the operation and maintenance of the proposed tower would be minor. The beneficial local economic effects would therefore not be significant.

Adverse social and economic effects are not expected because of the small number of workers required to construct the tower and associated equipment. As noted above, the construction of the Rapid City Radio Tower is not expected to cause a depreciation of property values adjacent to or in the general vicinity of the project site.

No Action – Under the No Action Alternative, no construction would occur and there would be no change to social and economic resources when compared to existing conditions.

3.10 ENVIRONMENTAL JUSTICE

EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) directs agencies to address environmental and human health conditions in minority and low-income communities. Environmental justice addresses the disproportionate and adverse effects of a Federal action on low-income or minority populations. The intent of EO 12898 and related directives and regulations is to ensure that low-income and minority populations do not bear a disproportionate burden of negative effects resulting from Federal actions. The general purposes of EO 12898 are the following:

- To focus the attention of Federal agencies on human health and environmental conditions in minority communities and low-income communities, with the goal of achieving environmental justice;

- To foster nondiscrimination in Federal programs that substantially affect human health or the environment; and

- To give minority communities and low-income communities greater opportunities for public participation in, and access to, public information on matters relating to human health and the environment.

Impact Threshold – The proposed project may have an adverse impact on environmental justice if a disproportionately high number of minority and low-income populations are negatively impacted by the proposed action. Demographic information from 2009 revealed that no minority or low-income populations would experience negative environmental consequences as a result of the proposed action.

Proposed Action – Under the Proposed Action, no disproportionately high or adverse impacts to minority or low income populations are anticipated. The Proposed Action would provide improved safety and emergency services to all persons in the project area as well as the west metro area regardless of their income or minority status. No minority or low-income populations would be displaced or adversely affected by the Proposed Action.

No Action – Under the No Action Alternative, no activity would be performed and no disproportionately high or adverse impact on minority or low-income populations would occur.

3.11 HUMAN HEALTH AND SAFETY

A safe environment is one in which there is no danger, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses workers' health and safety, and public safety during demolition and construction activities and during subsequent operations of those facilities. Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous regulations designed to comply with standards issued by Occupational Safety and Health Administration (OSHA), EPA and State agencies. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls and maximum exposure limits for workplace stressors.

Safety and accident hazards can often be identified and reduced or eliminated. Elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed and possibly susceptible population. The degree of exposure depends primarily on the proximity of the hazard to the population. FEMA-funded activities that can be hazardous include transportation, maintenance and repair, radiation exposure and the creation of highly noisy environments.

The proper operation, maintenance and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with a potentially explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells or horns.

For construction operations associated with any FEMA-funded projects, any waste contaminated with hazardous waste, asbestos-containing material, lead-based paint, or other undesirable components would be disposed of following hazardous waste management procedures.

The Rapid City West Radio Tower will be constructed within an undeveloped, vacant 0.65 acre parcel that historically has been vacant. The parcel extends northward from the intersection of Black Hills Power Substation Easement Boundary and Raider Road; is bounded on the west by the Black Hills Power substation easement and to the east by Raider Rd. The bounds of the 0.65 acre parcel are presented in Appendix A, Exhibit A-1 of this document.

Based on the specified elevation of the proposed antennas (>10 meters AGL) and because the site will be located within a secured compound, no threat to human health and safety is anticipated concerning radio frequency emissions.

Impact Threshold – Impacts to human health and safety can come from a wide range of activities. Workplace construction site safety can adversely impact health and safety, as well as the generation, handling, storage, use or disposal of hazardous toxic materials. If during the course of construction and/or operation of the radio facility a hazardous situation is noted, work that exposes workers or the public to the hazard should be halted immediately, supervisory personnel immediately notified and appropriate response actions taken. If appropriate, the proper agency should be notified. If contamination is encountered or created during construction activities, Pennington County 9-1-1 Users Board contact, or designated representative, must report the contamination to the Ground Water Quality Program. To report the release of a regulated substance, call 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Any contaminated soil encountered or created must be temporarily stockpiled and sampled to determine disposal requirements.

Proposed Action Alternative – Under the Proposed Action, there will be a slight increase in workplace safety hazards during the construction phase of the Tower Site because of the nature of construction work and the increased intensity of work at the Site. However, the impact of this increase should not be significant. Work areas surrounding construction activities should be fenced, and appropriate signs posted to further minimize safety risks. In addition, implementation of worker safety rules, derived from OSHA safety and health standards, will establish a uniform set of safety practices and procedures to protect workers. Construction-related impacts to human health and safety should not be significant.

Under the Proposed Action, LP fuels needed to power emergency generators will stored on-site in above-ground, steel tanks, to readily identify leaks in the AST assembly and minimize associated potential hazards. BMPs for the handling, storage, use, and disposal of fuels such as propane include regularly scheduled monitoring and inspecting of tanks for leaks. Depending on the size of the storage tank, a spill prevention, contingency and countermeasure (SPCC) plan may need to be developed.

The Rapid City Tower Site compound area will be enclosed by a 6 ft tall, chain link security fence, toped by one foot of 3-strand barbed wire. Access will be restricted to authorized personnel to minimize risks to human health and safety. Under the authority of Section 311 (j)(l)(C) of the Federal Water Pollution Act (Clean Water Act) found at Title 40, Code of Federal Regulations, Part 112 (40 CFR 112) a facility is not regulated under the SPCC Spill Prevention Plan if the aggregate aboveground storage tank capacity does not exceed 1,320-gallons (note: the volume of the proposed propane tank at the site is 250 gallons). Based on the specified elevation of the proposed antennas (greater than 10 meters AGL) and because the site will be located within a restricted area, no threat to human health and safety is apparent concerning radio frequency emissions. There are no anticipated significant adverse impacts to human health and safety resulting from operation of the Rapid City Tower Site under the Proposed Action.

The construction of this tower and appurtenances will be an important step in updating the communications infrastructure in the Rapid City west metro area. This radio tower will improve radio coverage and interoperable communications for first responders and emergency service providers in the Rapid City west metro area and will be an important contribution to the development of a statewide network and improving interoperability between emergency service providers. This will result in an operations-related beneficial impact to human health and safety.

No Action Alternative – Under the No Action Alternative, there would be no new construction. Current interoperability communications gaps will continue. There will continue to be adverse impacts to human health and safety as a result of the No Action Alternative.

3.12 INFRASTRUCTURE, UTILITIES, TRANSPORTATION, WASTE MANAGEMENT

3.12.1 Infrastructure

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure by definition includes a broad array of facilities including: utility systems, streets, highways, railroads, airports, buildings and structures, and other manmade facilities. Individuals, businesses, governmental entities, and virtually all relationships between these groups depend upon this infrastructure for their most basic needs, as well as for critical and advanced needs such as emergency response and health care.

Infrastructure is entirely man-made. An essential component of economic growth to an area is the availability of infrastructure and its capacity to support growth. The infrastructure components to be discussed in this section include utilities (electricity and communications), solid waste, and the transportation network.

Regulations governing communications infrastructure include Part 17 Construction, Marking, and Lighting of Antenna Structures of the FCC regulations (47 CFR Chapter 1), which prescribes procedures for antenna structure registration and requires the Federal Aviation Administration (FAA) to conduct an aeronautical study of the navigation air space to determine appropriate tower marking and lighting requirements to achieve safe air space. The FAA can vary marking and lighting recommendations when requested, provided that aviation safety is not compromised. Before the FCC authorizes the construction of new antenna structures or alteration in the height of existing antenna structures, an FAA determination of "no hazard" may be required. FAA notification is required for any new construction greater than 200 feet above ground level, and near any airport runway (taller than 100:1 for a horizontal distance of 20,000 feet, 50:1 for a horizontal distance of 10,000 feet, and 25:1 for a horizontal distance of 5,000 feet of a heliport). By checking the heights of proposed antennae and their proximity to airports, the FAA's NOTICE CRITERIA TOOL and the FCC's TOWAIR software system assists in determining if FAA notification or FCC filing is required (Note: The results of these screening tools, run at an early stage in site selection, indicate filing was not required for either FAA or FCC. Copies of these screening results are maintained in the Project File.

Impact Threshold – Impacts to infrastructure are typically observed as disruptions in service and utilities, either short or long term, resulting from increases in demand that may overwhelm the capacity of the local area to absorb them. A failure to engage in an adequate planning process to ensure that system capacity will be able to meet projected increases in demand can potentially result in adverse impacts to some segment(s) of infrastructure. If system resources are not available to meet demand during certain conditions, adequate resources (staff, material, budget) must be allocated to conduct analysis, identify the preferred action alternative, implement upgrades or to establish alternative procedures to cope with the temporary and/or permanent increased demand.

Proposed Action Alternative – The existing condition in the proposed action area has electricity and telephone utilities available along Hillsview Drive and Raider Road. Electricity will be extended to the Tower Site along Hillsview Drive; fiber optic telecommunications cable is available from the High School north of the project area which, as proposed, will be extended along Raider Road to the Tower Site. An adequate transportation network of roads exist in the area. SR 44 (Jackson Blvd | Rimrock Hwy) is an east-westerly trending Primary State Route Road, with non-limited access. Hillsview Drive, an asphalt paved, 2 lane north-south trending local road, adjoins the Tower Property about 0.8 mile north of SR 44. No airports are located within 11-miles of the Tower Site.

As proposed, the Rapid City Radio Tower will be 190 feet tall. Since the proposed Tower is not near any airport, FAA notification is not required for new construction less than 200 feet tall.

To verify notification is not required, the height of the proposed antennae and its proximity to airports in the Rapid City metro area (i.e., there are two on the east side of the city -- Rapid City Area Regional and Ellsworth Air Force Base) was submitted to the FAA's Notice Criteria Tool and to the FCC's TOWAIR software system for analysis. Both systems returned a result of "You do not exceed Notice Criteria".

Construction-related impacts are not expected to result in any shortages in supply, nor will any major changes to the infrastructure be required. Impacts to utilities are not anticipated to be significant.

During construction-related activities to implement the Proposed Action, precautions will be taken to avoid damage to existing utility lines. All potential modifications to utility services will have been evaluated. Coordination with potentially affected local and regional utility service providers will occur to avoid unnecessary damage or interruption of service.

Following construction, operations impacts are not expected to lead to major shortages in supply, nor will it require major changes to the services. There would be no significant impact to utility services from operations-related activities of the Rapid City Radio Tower Site.

No Action – Under the No Action Alternative, no change in existing conditions would occur and there would be no impacts to the existing infrastructure.

3.12.2 Utility Availability

Utilities for the new tower would be connected to existing nearby services. Electricity service is provided by Black Hills Power. Telecommunication fiber optic cable and service is provided by CenturyLink (see Sheets A-1 and A-2, drawings of the Site Plan and compound detail (EA Project Files, 2012d)). Construction-Related Impacts such as short-term minor impacts on utility quality and availability would be anticipated for developed areas.

Impact Threshold – As discussed above, under the Proposed Action, no significant adverse impacts to utility availability is anticipated. In the unlikely event that construction or maintenance activities result in actual damage to a utility system or interruption of services, a short-term significant impact may occur. The cause of the adverse effect will be identified – followed with appropriate mitigation

Proposed Action – Under the Proposed Action, the operation of the Rapid City Radio Tower would require electric and telecommunication services. Electric power provided by Black Hills Power, would be run southeasterly, buried, along Hillsview Drive and then turn northeasterly along Raider Road to a point at which a 10 foot wide Utility Easement has been established. Power is then extended by way of said easement to a transformer at the compound area. Fiber optic line would be run, southwesterly, buried along Raider Road, to a point where the Utility Easement is encountered and then run to the compound area to be linked to other telecommunications equipment. A new 15 kilowatt emergency generator on a concrete slab,

and one 250-gallon aboveground propane tank would be installed to provide emergency backup power to the communications tower compound. No disruption to utility services is anticipated during construction activities. Short-term utility usage increases (electricity and/or water) may be required during construction activities; however, these temporary needs would be limited in scope and easily accommodated by the existing infrastructure.

No Action – Under the No Action Alternative, no change in existing conditions would occur and there would be no impacts to area utilities.

3.12.3 Transportation and Site Access

An adequate transportation network of roads exist in the area. SR 44 (Jackson Blvd | Rimrock Hwy) is an east-westerly trending Primary State Route Road, with non-limited access. Hillsview Drive, an asphalt paved, 2-lane road, adjoins the Tower Site about 0.8 mile north of SR 44.

The Project Site is located east of Hillsview Drive and is accessed via a 40 foot wide Access Easement approximately 121.2 feet in length, which extends from Hillsview Drive to the Tower Site. (Note: the Access Easement will be shared with Black Hills Power – as this ground is also part of the access to their substation). The Access Easement extends to the western boundary of the Tower Site. At that boundary, the Access Easement ties into a graded gravel drive that extends across the Tower Property from the Access Easement to the compound area. The locations of Hillsview Drive, the shared Access Easement, the substation, and Tower Site are displayed in Exhibits A-1 and A-2, Appendix A of this document.

Impact Threshold – Under the Proposed Action, no significant adverse impacts to the Transportation network / infrastructure is anticipated.

Proposed Action – Under the Proposed Action, no significant adverse impacts to transportation or site access are anticipated. A minor temporary increase in the volume of construction traffic on roads in the immediate vicinity of the project site could potentially result in a slower traffic flow for the duration of the construction phase. To mitigate potential delays, construction vehicles and equipment would be stored on site during project construction and appropriate signage would be posted on affected roadways. No road closures are anticipated. Operation and maintenance of the tower compound would require monthly visits by workers.

No Action – Under the No Action Alternative, no construction would occur and there would be no impacts

3.12.4 SOLID WASTE MANAGEMENT

An environmental review response letter received from the Waste Management Program, SD DENR, stated that the Program does not anticipate any adverse impacts on waste management from the project. The letter did say that any construction debris needs to be disposed of at a permitted solid waste facility. If a solid waste disposal question should arise during the

construction or operation of the Tower Facility, they direct the applicant/operator to contact the Waste Management Program at (605) 773-3153.

Impact Threshold – Mitigation measures will have to be identified and implemented if the proposed project will have an adverse impact on solid waste facilities. The SD DENR has determined that based upon available information, this project will not result in a significant impact on solid waste.

Proposed Action Alternative – Under the Proposed Action, no significant impacts to waste management are anticipated. Waste generated during the construction activities would be removed from the project site and taken to an appropriate disposal site. The amount of waste generated would not cause a significant impact to local or regional solid waste management resources.

No Action Alternative – Under the No Action alternative, there would be no impacts to waste management because no construction would occur.

3.13 LAND USE PLANNING AND ZONING

Before Euroamerican settlement began to develop in the region in the late 1870s, the proposed Tower Property was one of many small finger ridges and promontories extending out from the eastern slopes of the Black Hills. As this particular site was distant from water and without visible natural resources, it was probably indistinguishable as a specific feature in the area.

The General Land Office surveyed the region in 1879, but the land including the Tower Property was not patented until 1891, when Samuel P. Wells obtained the land patent for N1/2 SW Section 4, T1N R7E. Mr. Wells obtained this land under the Timber Culture Act of 1873, which granted additional land (160 acres) to homesteaders willing to plant at least 40 acres in trees (42nd Congress, Sess. III, Ch. CCLXXVII, An Act to encourage the growth of timber on western Prairies). The nearest cultivated land was in the southeast corner of the quarter, on the opposite side of the wagon road. To what extent Mr. Wells planted trees on the Property is unknown.

The 0.65 acre Tower Site became part of a 1000 acre parcel that the federal government acquired under the Indian Appropriations Act of 1907 for the Rapid City Indian School (closed in 1933 and redeveloped as the Sioux Sanatorium tuberculosis facility in 1939), and then transferred an unused portion of these lands (673 acres), including the proposed tower property, to the National Guard in 1950. The National Guard used the area as a training ground, but there is no indication that the tower property was specifically impacted by these activities.

A sequence of aerial photographs (1938, 1952, 1967, 1972, 1972 infra-red, 1983 infra-red, 1991 and 2010 (EA Project Files, 2012e) covering a period of 72 years in the area of the Tower Site show that the property exhibits natural erosion in the lower portions of the property and some

disturbance by construction during two periods: the construction of the surrounding roads (Hillsview Drive and Raider Road); and the construction of the electrical substation.

The 1938 FSA aerial photograph for the Tower Site and adjoining property indicates that the Tower Site was an undeveloped treeless grass-covered slope trending down towards the northeast. Lighter gray bands within and outside the property indicate ground with little or no vegetation – a sign of natural erosion. There were no roads, trails or other cultural impacts in the area. The 1952 aerial has the same general features, with the addition of a tree – a Ponderosa pine, visible as a small dark patch – that has established itself in the northwest section of the Tower Site.

The 1967 aerial records the construction of West (Stevens) High School north of the Tower Site. Two large dark shapes in the northeast corner of the Tower Site are interpreted as spoil piles associated with the construction of the adjacent parking lot. The Ponderosa pine visible in the 1938 photo is still standing.

A 1972 aerial shows that the two major feeder roads to the high school and to the Tower Site area (Hillsview Drive and Raider Road) have been constructed. Hillsview Drive links to an access road that will provide means of entry to the Tower Property from the west, and Raider Road forms the south and east borders of the property (see Exhibits A-1 and A-2). The false-color infrared aerial from the same year (1972) shows more prominent light colored patches in the Tower Site are interpreted as areas with little or no vegetation – partly natural (the light patches, visible in the entire sequence, that run northeast down the middle of the property, and partly the result of construction along the eastern edge of the property. Given the proximity of the tower site to the roads and the extent of ground disturbance required to raise the road grades, it is very likely that portions of the tower property have been stripped, borrowed, landscaped, used for staging or otherwise disturbed during construction. The false-color infrared aerial taken in 1983 shows no change in these features.

By 1991, as the FSA aerial photograph indicates, the electrical substation had been constructed immediately to the west of the Tower Site. There are also two construction features within the property at this time: a two-track road that extends south-southeast from the substation entrance and then turns northeast to follow the contours down towards the northeast corner of the property; and an irregular, lighter colored band running east-west from near the northern boundary of the property, suggesting disturbance from construction of utilities associated with the substation.

As the 2010 digital color orthophoto indicates, and the field survey of the area in 2011 confirms, there have been no additional natural or cultural impacts in the tower property area. It should also be noted that the Ponderosa pine identified in 1938 is still standing on the top of the ridge in the northwest section of the property – it is pine with the largest canopy.

In summary, the tower property has had no evidence of any land use over the 72 year period of photographic documentation other than incidentally during the construction of adjacent features (the roads and the electrical substation).

3.13.1 Zoning

As the Tower Property falls within the City of Rapid City, it is subject to Chapter 17.46 Public District zoning regulations in the Rapid City, South Dakota, Code of Ordinances. The public district is established to provide for facilities which serve the general public that are operated by the United State of America, the State of South Dakota or any political subdivision which qualifies for exemption from property taxes, or nonprofit organizations. Facilities within the public district are generally not involved in commerce and frequently are sited with public safety and government efficiency in mind. Utilities are provided for in the public district to aid in the development of efficient systems.

Communication facilities are allowed as conditional uses under Chapter 17.46.030 City Of Rapid City, South Dakota Code Of Ordinances. However, as the Rapid City Attorney Jason E. Green indicates in a letter to Ms. Janelle Finck, Fisk Land Surveying & Consulting Engineers, Inc. (dated August 12, 2011), the City "has no authority to regulate what the State does on its property" and, therefore, requires no permits or approvals for construction of the radio tower (see letter Appendix B, Section B4)

Impact Threshold – The proposed project will have no impact on zoning regulations, as the City regards the tower project as exempt from City permits or approvals.

Proposed Action Alternative - Under the Proposed Action, project will have no impact on zoning regulations

No Action Alternative - Under the No Action alternative, the project will have no impact on zoning regulations.

3.14 HAZARDOUS WASTE/ CONTAMINATION (Man-Made Hazards)

Hazardous substances are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health and the environment. Improper management and disposal of hazardous substances can lead to pollution of groundwater or other drinking water supplies, and the contamination of surface water and soil. The primary Federal regulations for the management and disposal of hazardous substances are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA).

Jerry Rickert, Battalion Chief, with 22 years of service with the Rapid City Fire Department was contacted by phone by Barry Harrison of LRI (Rieckert, 2012). In the conversation with Battalion Chief Rieckert, he did say that he was familiar with the subject acreage, having grown

up on the west side of Rapid City. He was not aware of any chemical releases, spills, fires or emergency responses on the proposed Tower Easement or on the adjoining lands.

A regulatory records review was solicited from Environmental Data Resources, Inc. (EDR). EDR was commissioned to compile federal, state, and tribal database information regarding potential environmental concerns at or within specified distances of the Tower Site. The EDR report was prepared for the Site and surrounding area on January 23, 2012 (EDR, 2012). EDR makes use of state, local, federal, and Tribal Records database lists. The EDR search for this Property met the specific requirements of the ASTM standard practice for Environmental Site Assessments including those associated with governmental databases, search distance, and data accuracy. Although the completeness of the data is dependent on the agency database, the EDR report indicates that all the state and federal databases included in the search had been updated in compliance with the ASTM standards. The 0.65 acre Tower Site and surrounding properties did not appear on any lists.

A visual inspection of the proposed Tower Site and adjoining lands was conducted by Barry Harrison of LRI on October 1, 2011. The inspection consisted of a walk-over of the proposed Tower Easement, all roads that surround the Easement, and a visual inspection of the adjoining acreage. The walk-over survey is designed to identify potential and actual environmental concerns on and adjacent to the Tower Property. During the site a visit, no observations of stressed vegetation, discolored soils or surface water, pits, ponds, lagoons, or fill ports and/or vent pipes associated with underground storage tanks, drums, debris piles on or in the vicinity of the Tower Site were noted. Photographs of the tower Site and adjoining acreage are attached as Figures 5 - 14.

No known hazardous waste handlers or facilities, including leaking underground storage tanks or brownfield sites, were identified within a 1-mile radius of the project site (EDR, 2012). Hazardous wastes are not anticipated to be encountered during excavation and construction at the project site.

Impact Threshold – The Waste Management Program does not anticipate any adverse impacts. Any construction debris needs to be disposed of at a permitted solid waste facility. Mitigation measures will have to be identified and implemented if the proposed project will have an adverse impact on solid waste facilities (such as handling or temporary storage) within the project area. The SD DENR has determined that this project is not expected to result in any adverse affects resulting from matters relating to the management of solid wastes.

Proposed Action – The Proposed Action is not anticipated to generate a substantial amount of hazardous wastes as a result of construction and operation of the communication tower. Hazardous substances specific to the construction and operation of Rapid City West Radio Tower may include batteries, spent fuel and used oil, and obsolete or broken system components (e.g., computer parts). These hazardous substances would be generated during construction, maintenance, or decommissioning of the tower and its components. At the

project site, the only potential baseline hazardous substance would be the propane used to fuel the emergency generator. Pennington County 9-1-1 would handle (i.e., contain, store, transport, and dispose) all hazardous materials and wastes generated or discovered in accordance with applicable State and Federal regulations.

Routine maintenance and upkeep of the site (i.e., repairing and replacing system components) would normally include servicing, cleaning, or repairing the electronic equipment contained in the site compound or mounted on the tower. Materials and chemicals commercially available for use in electronic maintenance would be used, stored, and disposed of in accordance with applicable Federal, State, and local regulations. Routine maintenance on the emergency backup generator (changing the engine oil, etc.) would generate regulated waste that would need to be properly managed. Additionally, any maintenance to the tower structure or site compound (painting, etc.) could involve regulated materials that would need to be properly managed.

No Action – Under the No Action Alternative, the subject communication tower would not be constructed. Therefore, there would be no additional generation of hazardous wastes at the project site.

3.15 COMMUNITY FACILITIES AND SERVICES

In general, any disruptions in COMMUNITY FACILITIES AND SERVICES are expected to be minor and of short duration. However, the proposed upgrades and enhancements to existing Pennington County 9-1-1 emergency communications services in support of fire, and police and other first responders would result in increased public safety and possibly reduced loss of human life, as well as reduced property losses.

Local equipment would be purchased and local labor would be used to the greatest extent practicable to construct the proposed telecommunications tower. This would result in both direct and indirect spending in the local community. The amount of revenue introduced into the local economy during the construction phase would be limited in amount and duration. Ongoing expenses for the operation and maintenance of Rapid City West Radio Tower would be minor. The beneficial local economic effects would therefore not be significant. Adverse social and economic effects are not expected because of the small number of workers required to construct the tower.

Impact Threshold – As indicated above, under the Proposed Action, no adverse impacts to Community Facilities and Services are anticipated. In the event that there are unexpected backups in local traffic patterns, any such adverse effect would be attenuated through the appropriate signage. These effects would be short lived and terminate when construction is complete.

Proposed Action Alternative – Under the Proposed Action, no adverse impacts to Community Facilities and Services are anticipated. The most tangible beneficial effects of the Proposed Action would be better Pennington County 9-1-1 communications and improved effectiveness

of emergency operations. This would result in increased public safety and possibly reduced loss of human life, as well as reduced property losses.

To the extent practical, local construction and building materials and equipment would be purchased and local labor would be used to the greatest extent practicable to construct the proposed Rapid City West Radio Tower Facility. This would result in both direct and indirect spending in the local community. The amount of revenue introduced into the local economy during the construction phase would be limited in amount and duration. Ongoing expenses for the operation and maintenance of communications facility would be minor. The beneficial local economic effects would therefore not be significant.

Increased residential and commercial development often follow the development of community services including telecommunications. Therefore it is foreseeable that parts of the area to be serviced by the proposed tower, in which cellular communications was unreliable or perhaps a dead zone with no coverage, will benefit from fundamental and/or improved telecommunications service. The areas that are expected to be within the areas of enhanced coverage are shown in the model results included in Appendix E.

Adverse effects on COMMUNITY FACILITIES AND SERVICES are not expected because of the small number of workers required to construct the tower and associated equipment. As discussed in SECTION 3.9 – SOCIOECONOMIC RESOURCES, the construction of the Tower Site is not expected to cause a depreciation of property values adjacent to or in the general vicinity of the project site.

No Action Alternative – Under the No Action Alternative, the subject communication tower would not be constructed. Therefore, there would be no disruptions in COMMUNITY FACILITIES AND SERVICES. The need to improve their public safety interoperable communications capabilities – upgrade their antiquated telecommunications system would not be addressed. This would result in continued threat to public safety and possibly loss of human life, as well as continued unnecessary property losses.

3.16 CUMULATIVE IMPACTS

Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. It is the combination of these effects, and any resulting environmental degradation, that should be the focus of cumulative impact analysis. While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time.

Impact Threshold – The cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource no matter what entity (federal, non-federal, or private) is taking the actions.

Proposed Action Alternative – Under the Proposed Action, no cumulative impacts are anticipated. The Proposed Action will not result in any further actions that would compound the minimal impacts that are anticipated due to the construction or operation of the communications tower. The project area is already developed and no additional tower construction is expected in the immediate area.

No Action Alternative – Under the No Action Alternative, the subject communication tower would not be constructed. Therefore, there would be no impacts, cumulative or otherwise.

Table 3-4: SUMMARY IMPACT TABLE

Affected Environment/ Resource Area	Impacts	Agency Coordination/Permits	Mitigation/BMPs
Geology and Soils	No Significant Impacts	Total area of disturbance is less than 1 acre	Standard BMP for erosion control
Air Quality and Noise	Minor, Short-term Impacts during construction	None	Standard BMP for dust control and equipment maintenance
Water Resources	No Significant Impacts	SD DENR January 4, 2012	None
Floodplains	No Impacts	Zone C Per FIRM 3460064 0733B	None
Wetlands	No Impacts	Site visit and NWI maps	None
Vegetation and Habitat	No Significant Impacts	None	None
T&E Species and Migratory Birds	No Significant Impacts	USFWS January 23, 2012	FWS "Service Guidance on Siting, Construction, Operation and Decommissioning of Communication Towers (September 2000)"
Historic and Cultural Resources	No Significant Impacts	SHPO concurred	Stipulations included

Affected Environment/ Resource Area	Impacts	Agency Coordination/Permits	Mitigation/BMPs
Native American Resources	No Significant Impacts	TCNS #80146	Standard 'Discovery Clause' applies
Land Use	No Significant Impacts	None	None
Infrastructure	No Significant Impacts	None	None
Human Health & Safety and EJ	No Significant Impacts	None	None
Cumulative Impacts	No Significant Impacts	None	None

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Mr. Rufledt, Jr., EPN, has provided an enormous amount of information on the historic and current workings and future goals regarding the PENNINGTON COUNTY 9-1-1 USERS BOARD interoperable communications network. He has been most helpful in sharing his vision and that of the USERS BOARD, on matters of building protection capabilities across the state, expanding regional collaboration, strengthening interoperable communications, and improving capabilities to detect and respond to emergencies in the Rapid City metro area and beyond.

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